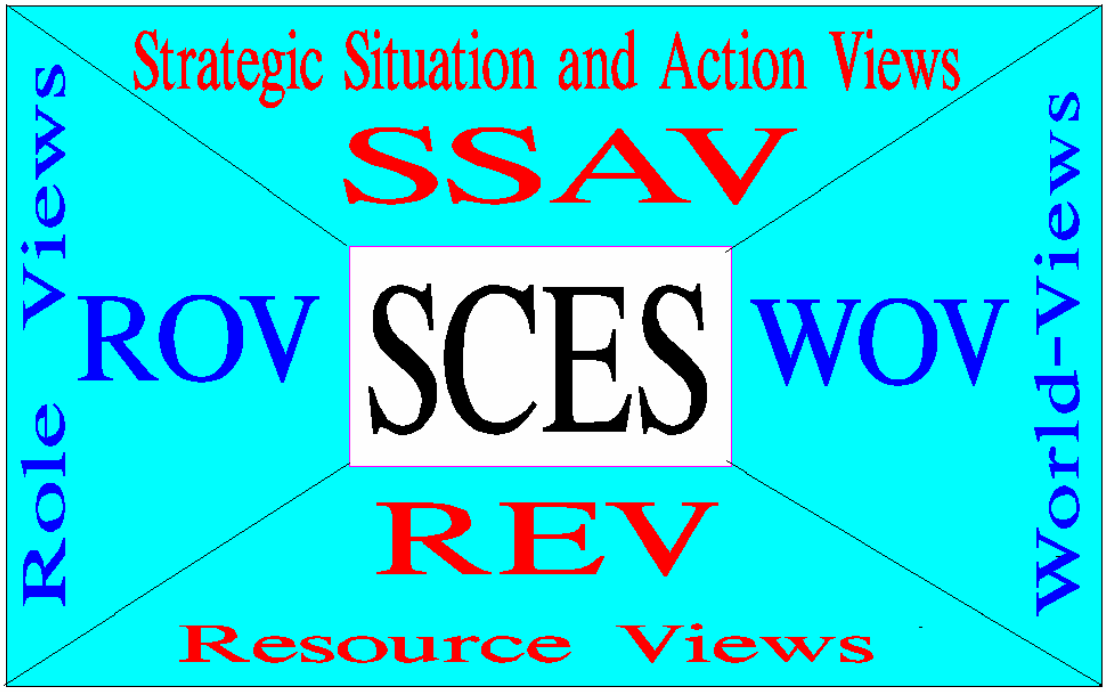
CONCEPTS AND MIND

As Dynamic Memory-Systems Structuring

THE HUMAN MENTAL



New Interpretations of Human Knowledge, Values, Motivation, and Culture, which steer the Rationality in Man's Reasonings and Actions

Viljo K. Martikainen

Helsinki University of Technology / Department of Industrial Management / Laboratory of Work- and Organisational Psychology and Leadership

CONCEPTS AND MIND AS DYNAMIC MEMORY-SYSTEMS STRUCTURING THE HUMAN MENTAL

New Interpretations of Human Knowledge, Values, Motivation, and Culture, which Steer the Rationality in Man's Reasoning and Actions

Viljo K. Martikainen.

Dissertation for the degree of Doctor of Science in Technology to be presented with due permission for public examination and debate in Auditorium TU1 at Helsinki University of Technology (Otaniementie 17, Espoo) on the 9th of January, 2004 at 12 o'clock noon.

Contact information:
Johtamiskonsultointi Viljo Martikainen Oy
= JOKO-VM Oy
Phone: +358 50 3690329
E-mail: viljo.martikainen@hotmail.fi
E-mail: viljo.martikainen@alumni.aalto.fi

© Viljo Kalevi Martikainen 2004
ISBN 952-99291-0-2
ISBN 952-99291-1-0

Edita Prima Oy, Helsinki 2004

ABSTRACT

This study offers new views to the problems of the human mental by assuming that its primitives, atoms, molecules, and structures are formed by our memory representations of entities and the mental states caused by them. With the system models of human concepts and mind the eternal problems of human knowledge, values, motivation, language, action, and organisational culture are approached from a new point of view. The human experienceable world is produced by our brain-systems **emergent abilities** to transform the material afferent action potentials into the mental descriptions of the sensed environment and its meanings. The memory structures and functions are seen as metaphors of our brains' emergent abilities to process, store, and view memory representations of the sensed, thought, or imagined entities of the being. The system models of man, his memory representations, and his concepts and mind are postulated in Chapters 2, 3, and 4.

The other transformation process of our brain-system is the **steering effect**, in which our thoughts, plans, and decisions are formed into **situation relevant flows** of efferent action potentials. They, in turn, have a causal control of our speech and other motor actions. The RA-model of man and his mental steering system built in this study aims at finding natural explanations for some of the eternal problems of psychology, philosophy, management, and, in fact, all human sciences. These problems mostly circle around the relations between the human body and mind. In the RA-model these problems are left hidden behind the above named two transformations, which offer a challenging research fields for future neurobiology, neuropsychology, brain researches, human scientists, and philosophers. Though sciences do not have good explanations of how our mental experiences are produced in our central nervous system, we can build memory-based tools to describe and better understand the substance, structures, and functions of the human mental and through them the human actions.

In the RA-model, the dorsal and ventral streams, mirror neurons, and man's testable memory representations are seen as a set of facts of which one can build a system model of man and his interactions with his environment. Man's concepts as structures of his memory representations function as situation relevant and handy tools for thinking, planning, and decision-making. RA's concepts enable a natural explanation of the human mental. Concepts can be used to disclose the mental dimensions of cultures, which seem to be hidden in the values, norms, language, and action models adopted by the members of the culture. Thus, they serve also the conscious control of man's mental and materially manifesting actions and activities.

TIIVISTELMÄ

Tämä tutkimus tarjoaa uuden näkemysen ihmisen mentaaliseen liittyviin ongelmiin. Tutkimuksen lähtökotana on ajatus, että mentaalisen primitiivit, atomit, molekyylit ja rakenteet muodotuvat muistirepresentaatioista ja niistä mentaalisista tiloista, joita ne aiheuttavat. Uudet ihmisen käsitteiden ja mielen systeemiset mallit tarjoavat myös uuden näkökulman tiedon, arvojen, motivaation, kielen, toiminnan ja organisaatiokulttuurin ikuisuusongelmiin. Kokemamme maailma on aivojärjestelmämme **emergenttisen** muuntokyvyn tuotosta. Siinä afferenttien aktiopotentiaalien vuo muunnetaan elämyksellisesti koetuksi kuvaukseksi aistitusta ympöristöstä ja sen merkityksistä. Muistin rakenteet ja funktiot nähdään metafoorina aivojemme emergenttisistä kyvyistä prosessoida, tallentaa ja palauttaa koettavaksi muistiedustuksia aistitusta, havaitusta, ajatellusta tai kuvitellusta olevasta.

Aivojemme toista muunnosprosessia kutsun **ohjausvaikutukseksi.** Siinä ajatuksemme, suunnitelmamme ja päätöksemme muunnetaan **tilannerelevantiksi** efferenttien aktiopotentiaalien vuoksi, jolla on kausaalinen ohjausvaikutus puheeseemme ja muihin motorisiin suorituksiimme. Tässä tutkimusessa rakennettu RA-malli ihmisestä ja hänen mentaalisesta ohjausjärjestelmästään pyrkii löytämään lunonnollisia selityksiä eräille ihmistieteiden ja erityisesti psykologian, filosofian ja johtamisen ikuisuusongelmille. Nämä ongelmat liittyvät useimmiten ihmisen psyyken ja ruumiin välisiin vuorovaikutuksiin.

RA-mallissa nämä muunto-ongelmat on jätetty noiden kahden transformaation sisältöön. Ne tarjoavat haastellisen tutkimuskentän tulevaisuuden aivojen, neurobiologian, neuropsykologian ja ihmistieteitten tutkijoille ja filosofeille. Vaikka tieteillä ei ole tarjolla pätevää selitystä sille miten keskushermosto tuottaa elämyksellisesti koetun, voimme kuitenkin rakentaa muistiperustaisia välineitä kuvaamaan ja selittämään ihmisen mentaalisen olemusta, rakenteita, funktioita ja siten myös hänen toimintaansa.

RA-mallissa aivojen dorsaali- ja ventraali kanavat, peilineuronit ja testattavat muistirepresentaatiot nähdään faktoina, joille ihmisen ja hänen vuorovaikutustensa systeeminen malli voidaan rakentaa. Ihmisen käsitteet hänen muistinsa rakenteina tarjoavat tilannerelevantit ja kätevät ajattelun, suunnittelun ja päätännän välineet. RA:n käsitemalli mahdollistaa ihmisen mentaalisen luonnollisen selittämisen. Käsitteitä voidaan käyttää avaamaan kulttuurin mentaalisia ulottuvuuksia, jotka näyttävät kätkeytyvän niihin arvoihin, normeihin, kieleen ja toimintamalleihin, jotka sen jäsenet ovat omaksuneet. Näinollen käsitteet palvelevat ihmistä sekä mentaalisen että kehollisen toiminnan ja toimintojen tietoisen hallinnan välineinä.

PREFACE

My interests to the human mental originate from my work as management consultant. Information, knowledge, values, motivation, and organisational culture were terms whose referents were central topics in the seminars connected with the developmental programs in organisations, which I have planned, led, and participated. Market share, productivity of time, material, and capital, etc. were often formed as a new set of controlling values and were used as measures in the new managerial incentive-systems. These systems formed one of the final parts of the implementations of these organisational developmental programs. My gradual gliding toward retirement during the last ten years offered me time to deepen my studies in human sciences and philosophy, and to write this work.

The Laboratory of Work Psychology and Leadership in the Department of Industrial Management of Helsinki University of Technology offered me the environment to study for doctoral dissertation. Professor Veikko Teikari accepted my preliminary plans of a model of the human mental. I owe much to him and Matti Vartiainen for their encouragement to hold on and sharpen the total model of man's mental features in the different versions of the RA-model of man. They noticed that students in Helsinki University of Technology had never presented such a total model of man's mental in a thesis so it is worth of trying.

After almost 40 years in consulting work it was really refreshing to participate in seminars and workshops with the young and brilliantly intelligent students of the Department and Laboratory. They simply made their thesis and disappeared in the labour market while I was wondering how my total model is connected with philosophy, linguistics, semiotics, neuropsychology, and brain research. Some discussions with Academy Prof. Riitta Hari and professor Risto Näätänen showed the necessity of connecting my model with the recent results of the brain research and neuropsychology.

I owe very much to my pre-surveyors professors Ilkka Niiniluoto and Göte Nyman. Their friendly remarks made me think once more what it means when your present a memory-based natural meta-model to view some central theories in human sciences and philosophy. How the problem and theories of emotion, learning, truth, and free will could be seen through the proposed model of man. These questions caused a new set of reasoning and inferring processes I needed for building the models of the human mental from its atoms and molecules.

The meetings and seminars arranged by Helsinki University of Technology, Helsinki University, Turku School of Economics and Business, Philosophical Society of Finland, Society of Natural Philosophy with its internet discussions, Finnish Society for Futures Studies, Helsingin Tietojenkäsittely-yhdistys ry, and of course, my seminars in the client organisations have offered forums to discuss the problems connected with the main items of this study.

During the past years when meeting different audiences and individuals I have often had a teasing - may be a Socratic - habit to make laborious questions. For example, I asked my audience if they have lately seen concepts, or motivations, or where does their knowledge and values exist, or how do they see the differences between knowledge and information, or what action is. These questions seemed to function as fruitful mental teasers opening often very natural path to the actual discussion items at that time. Now these items form the problems of my study, and I see them as the central elements of the human mental.

In discussions of the early plans of my study I have got understanding and encouraging feedbacks from professors Pentti Malaska, Olavi Borg, Lauri Rauhala, and Kullervo Rainio. Dipl.Eng. Jouko Seppänen from the Department of Computer Sciences in Helsinki University of Technology as a specialist and writer of the history of systems, sciences, and technology has functioned as a living encyclopaedia in many questions in my multidisciplinary work. Poet and writer Lassi Nummi helped me to find the book and author of a poem, which I remembered but whose author I had forgotten. This Uuno Kaila's poem, Sanoja, nicely exemplifies the genesis of values in child's mind. Many of my friends and tennis pals have devotedly participated to my worries of the theoretical and pragmatic problems around my work. I'm addressing my thanks to all of them and especially to the following three: MD, Phd. Jaakko Seiro, Dr. Johan Silén, and Prof. Veikko Pohjola.

Academy Prof. Riitta Hari leading the brain research group in the Laboratory of Low temperatures in Helsinki University of Technology was the first brain researcher with whom I discussed of my system model of human concepts. Prof. Reza Nilipur, a neurolinguistics from Teheran University, during his visit in Finland gave the second impulse to take some of the results of brain research as the factual basis of my study of the human mental. The on-line and memory-line connections to one's environment solved some of the problems of the RA-model.

During a lovely summer week at Mekrijärvi campus of Joensuu University 1998 was a seminar of Mind, Language, and Brain, where specialists on these research fields discussed about the connections between their areas. Though my paper was late and did not room to the program, I had during this week a pleasure to discuss my model's connections to linguistics with many of the participants of the seminar. Important and encouraching were the discussions with prof. Jussi Niemi from Joensuu University, and prof. Michel Paradis from McGill University, Montreal. They found my model of human concepts and the linguistic attributes as elements of concepts' sensory structures to open a new and interesting approach to some of the linguistic problems.

I have had the pleasure to have three English-speaking friends who have offered their time to grind my English expressions towards more proper ones. The late John Paul Talvensaari offered critical points of view to my model of man and his mental and a good linguistic adviser in the early phases of RA-model's development. Doctor Rita Le Vahr did the hardest job. Besides correcting my English, she could view the RA-model from the point of view of the human problems in the nursing sciences. Eero Ranta, a remigrant from Michigan and working on his own thesis, has helped to view the language of the changes in the latest version of my work.

Finally I have to thank my lovely wife Tyyne for acting as a continuous discussing partner around the problems in my research work. She has often reminded me that the better is the enemy of the good, referring to the never-ending nature of my study. My granddaughters Sara and Camilla have been good living examples of how the human linguistic and intellectual development proceeds with the increasing age. They have proofed the proverb that: 'From children's and suckling's mouth you hear the truth'.

At age of 3 Sara advised her grandmother when she was looking for her glasses: 'Grandma, put your glasses always in the same place so you know where they are'. This perfect sentence Sara used showed how a linguistic expression, which she presumably had heard earlier in similar situations, was stored in Sara's long-term memory as situation relevant linguistic attribute of the memory representation of the episode. It was recalled and was ready to be used when similar situation occurred once more.

Just recently the same Sara - now 9 years of age - answered to my question of truth by an practical example: 'If I tell you that I was with father and Camilla in a bar yesterday and had big portions of ice-cream it would not be the truth, because we had Big-Hessburgers'. Sara's

explanation of truth was built on the relations between the linguistic expression describing the yesterday event and the reality, as Sara herself and the other participants of it lived it through. These small episodes show that many theories in human sciences could make good use of our everyday observations of life along with the research done in laboratories.

This study has grown from the forty years of pragmatic developmental work in different kinds of private and public organisations. It can be seen as a trial to use the many-sided experiences I have had in searching for the invariant features of the human behaviour and cooperations in varying situations in organisations. This study has aimed at finding a scientific combination of these experiences in a model, which could serve other researcher in human sciences and philosophy.

TABLE OF CONTENTS

TABLE OF FIGURES

1. INTRODUCTION

1.1 Four Intuitive Definitions as the Background of the Study

1.1.1 Consulting work as the original playground

Though this study is in its nature meta-theoretical, as will bee seen, its background is most pragmatic. I shall be searching the common nominator or implicit theory of some useful definitions found in my work as a management consultant. The ideas in those definitions have grown from the practical developmental work in many types of organisations in the private economy and public administration. In my consulting work and management training, I have been using these intuitive[1] definitions connected with the developmental programs and processes of management systems and practices. The definitions were outcomes of work, studies, and hobbies in human sciences, management, and philosophy and from numerous discussions with the seminar groups and colleagues participating in the developmental programmes in different organisations.

The common objects of consulting assignments were to improve the productivity of all of the input factors in organisational activities such as work, material, time, intellectual and monetary capital, etc. It meant also a thorough search of management systems and techniques responsible for the information and knowledge bases, wage and salary systems, the ways individuals, groups, departments, businesses, and companies were organised and motivated to strive toward the common goals, etc. These definitions concerned theoretical entities like action, knowledge, motivation and organisational culture. The definitions aimed at increasing the common understanding of some central mental factors, which were commonly found to be important in all the developmental interventions in the organisations I have participated as a consultant.

As a background of those definitions were also my studies in industrial economics and management, psychology, industrial psychology, and hobbies in other human sciences and philosophy. Especially I had been influenced by Eino Kaila's idea that human knowledge is formed and built through a continuous strive toward finding the invariant features of the entities of the being. If a researcher or a layman finds some rules of thumb or regularities in

---

[1] **Intuition** is here seen as a conscious outcome of a set of unconscious mental processes in which the material from different sources are manipulated and melted together into a form of an 'aha-experience' or a new insight and mental vision of the problem which has annoyed and disturbed one's thinking and planning operations.

his areas of interest, it is a source of great joy. The found invariances usually solve some problems and sometimes they give you a possibility to forecast, what will happen in the future. Thus, the rules found serve also the human security needs (Kaila 1939). The often unconscious aiming at securing the well being of individual and survival of species may be on the background of most of our endeavours and motivations even in scientific efforts.

One motive for striving to find working definitions for terms used in managerial circumstances has possibly been my participating in the lexical work of Rationalisointiliitto r.y. It aimed at the creation of the Finnish terminology of Work Study, Rationalization, and Ergonomics or Human Engineering (partly published in Martikainen & all. 1978). However, the main impact has been in the needs grown from my practical consulting work in different kinds of organisations. There has been also a common collegial slogan between consultants, which says: 'Define your terms'. This was seen important because all proper consulting work, aiming at permanent results, meant also changes in the organisation culture, its values, norms, and terminology applied in the **managerial language**. Each intervention in an organisation needs effective means of communication and it meant also that you had to explain thoroughly the terminology to be used. It was necessary to have an agreement of the referential meanings of the words and theoretical terms, which were applied in the interactions with the people in the client organisations. Thus, the need to define one's terms, which were used in the managerial training seminars and in all communications, had practical grounds.

1.1.2 An Intuitive Definition of Human Action

Organisations are collections of individuals and groups aiming at some valued end state of affairs by planned, coordinated, organised, and controlled actions and activities. Actions and activities are seen as one set of the necessary means for achieving the goals, which organisations and individuals are aiming at. One of the intuitive definitions, with which I have been working and which is relevant in this study, has been the **definition of action**. I had seen the definition of action useful to reveal what were the **material and mental elements** of the developmental programs. It helped also to analyse the total structure and goal setting of the programs. It helped to see what were the goals, resources, planning and control system, and problems of the action and activities of the organisation. It co-ordinated the planning and executing the development programs, which were worked out with the people in the working and planning and control groups of the organisations in which I have had the pleasure to co-

operate. The common aim was to advance their efforts toward higher total productivity and higher esteem of individuals' creativity, intellectual capital, and other mental powers.

All the four definitions from action to knowledge, motivation, and organisational culture can be seen as explications of long lasting **inductive and intuitive processes** of pondering the basic **invariant features** of the organisational phenomena in and during various developmental programs. They can also be seen as results of a pragmatic collecting and fusing of the thoughts in managerial theories, philosophy and psychology published and presented in the territory and domain of management. I shall return to all of the intuitive definitions later in Chapters 5 to 7 when the tools to handle them are created in Chapters 2, 3, and 4. -When seen as goal-oriented human activity action can be defined as follows:

Definition 1: **ACTION is <u>controlled</u> use of resources to achieve a certain goal**.

There is an implicit agent or actor – an individual, a group, an organisation, or any organism – who has the ability to plan and control the use of the attainable resources to achieve a valued and purposeful goal, which is seen important for the well being and security of the actor and his interest groups. There are four main elements in this definition, which are contained in the referental meanings of the words: to achieve, goal, resources, and controlled use. In organisational development assignments the analysis of them can lead to corresponding object areas and processes of managerial work such as the processes of planning, decision making, controlling, feed-back, etc. The mental processes of planning and controlling are on the focus of this study and I shall return briefly to the concept of action and these subprocesses of the planning and controlling of actions in Chapter 7.

The intuitive definition of action led then to intuitive, though in practice helpful and satisfactorily working, definitions of knowledge, motivation, and organisational culture. The main mental elements of organisational culture were assumed to be the values, norms, and language of the organisation. All these terms refer to theoretical entities, which are assumed to have their causal effects to the manifesting features of individuals' actions and behaviour. In this study I am assuming that these theoretical entities have their controlling power through their **subjective existence or subsistence** in subjects' minds. In what follows, I shall briefly list those three definitions, which I have seen to have central importance in managerial circumstances. I shall use the basic ideas in these intuitive definitions as ignitions to the research to find the ground on which one could begin to outline **the universal basis of man's directability.** I shall use them also in my trial to find

the common basis of the human mental hiding implicitly in these definitions. This problematic meta-model[2] of man's mental forms then the goal of this study. I shall use the model also in building **my hypothesis** of the study in Chapter 2 where the basic facts and assumptions of man's substance and his material and mental dimensions will be explicated.

1.1.3 An Intuitive Definition of Human Knowledge

Human knowledge forms the essential tool of all controlling systems on all levels of organisational work. In order to have a certain goal one has to know what are the valued and accepted ideas or basic principles for choosing the proper goals. One needs to know also the feasible resources and the correct ways and methods of using the resources for executing activities needed to achieve the valued goals, etc.

Definition 2: **KNOWLEDGE is a description of an entity of the being documented by concepts and/or signs.**

The knowledge could be **documented** by intersubjectively understandable **signs, symbols**, **and sentences,** which were seen as the **manifesting** elements of some natural or formal language, spoken or written and in use in the community in question. The knowledge could be **documented also** by **concepts,** which were thought to be subjective and internal mental entities stored and experienced through individuals' memory functions.

The idea here was to include under the definition of knowledge - besides the mentally experienced descriptions of the being - also all forms of materially manifested information such as written or spoken language and all the forms of storing and transfering information in electro magnetic structures and nets and also as traces in the neuron nets of our memory stores.

Concept and **its** structures and functions –as postulated in chapter 3 - will be in central role when structuring the RA-model of man's conscious mental states like knowledge, emotions, motivations, etc. Concepts are also the elements and tools of man's planning and

---

[2] **Meta-model** refers here to a model or theory, which can possibly function as a natural and universal explanation ground for some of the existing theories in human sciences and philosophy. The RA-model as a meta-model of man and his mental may be findable behind the explications of my four intuitive definitions of action, knowledge, motivation, and organisational culture.

control system. I shall postulate the system structure of concepts in Chapter 3 and use its different types in Chapter 4 as elements of RA's planning and control system.

1.1.4 An Intuitive Definition of Motivation.

The third intuitive definition is also connected with the definition of action. It is connected even with the Aristotelian way of seeing **action as a result of choice** (Aristotle 1980 p.139). All choices are in turn depending on the desire and reason connected with the action itself, or its end goal. If knowledge of the goal can be seen as the basis of reasoning then even the desire must be based on the knowledge of it and of its meaning to the subject. The third intuitive definition of this study concerns motivation that was seen as what follows:

Definition 3: **MOTIVATION is a goal oriented MENTAL ENERGY that is sufficient to lead to the results the subject is aiming at.**

The intuition here was that the goal is so important and so meaningful for the individual that it creates and maintains the **mental or the experienced control energy and power** needed to initiate and lead the actions and performances necessary for achieving the aimed goal. Besides being goal oriented, the mental energy had to be sufficient in intensity and duration to secure the driving forces until the aimed results were achieved. In chapter 5, I shall discuss how motivation is connected with the totality of the postulated mental entities of **concepts and RA's mental planning and control system** with its **scene of experiencing and steering**, which will be postulated in chapters three and four.

1.1.5 An Intuitive Definition of Organisational Culture

The fourth intuitive definition is connected with a popular managerial tool called organisational culture. It is one of the most fashionable and persistent issues in managerial literature, psychology, and leadership research of recent times. It was - and is still - seen as one of the most important tools of management. Culture is often said to be manifesting in the ways its members think, speak, behave, and act; a culture manifests also in the artefacts it produces and uses (Richman 1965, Perlmutter 1969, Weinshall 1973, Deal &Kennedy 1982, Schein 1986). Here I shall limit my interest to the question, what are the **mental**

features and dimensions of an organisational culture. What directs and controls the behaviour and the formulations of the rites, rituals, actions, and products manifesting the mental features of cultures? I have presented some of the previous ideas of the mental features of organisational culture in a brief article dealing with salary and wage systems as tools of management (Martikainen 1986). In that article, managerial behaviour with its feedback-, salary-, and incentive systems were seen as important tools of change and tools of creating and maintaining the mental elements and features of an organisation culture.

The article was and is based on experimental results from numerous organisational developmental processes, in which one could quite clearly see and measure changes in participants' values. When production factors, like the quality of products, productivity of work, material, and capital, were connected with wage-, salary-, or some other kind of positive feedback system, they were very soon converted into value bearing entities. Quite soon, after the implementation of a wage system in which of these productivity and quality factors were applied as measures, there was seen a clear change of attitudes toward these factors. It seemed quite evident that the measures and norms of productivity and quality were internalised. This meant that the referents of these terms and measures were transformed into values, which began to direct the everyday attitudes, thinking, goal and norm setting, and the practical ways and methods the activities were executed. Values carried by entities seemed to be functions of the positive feedbacks connected with these measures.

The adopted values could then be seen as mental entities, which directed or controlled the **goal setting** processes. The installed norms were controlling the **execution** of actions and activities and the quality of performances. During the developmental process, the **terminology** was thoroughly discussed so everybody knew the meanings of terms and the meanings of used measures. Investing in the common language enabled the needed communication, interaction, and exchange processes. Values, norms and language can then be seen as elements also in Schein's analysis of organisational culture, (Schein 1986). The definition of organisational culture - implicit in my article - could be explicated as follows:

Definition 4: **The core mental elements of organisational culture are formed by the values, norms, and language adopted by its members.**

These three elements are seen here as the main **mental elements,** which control the manifesting behaviour-models of its members. These main elements were often

materialised in different manifested rules and slogans telling that: 'we always do this way' or 'we never do that way'. These elements were also with in all programs in different forms of training seminars for members of working and controlling groups. One of the first tasks in developmental interventions was to start the process of learning a common language by discussions and definitions of the main terms and their referential and value meanings. It was seen important that everybody had a common understanding what profit and productivity of time, capital, material, and work really meant.

The main values and norms were taken also as measures into the incentive systems installed as parts of the programs. They were planned and implemented on different levels of personnel as tools to secure the continuity of the advancement and maintenance of the results of the program. In what follows, I will return to these elements of organisational culture as well as the other intuitive definitions, because they are connected with the concept of **knowledge** and its dimensions that is one of the main subjects of this study.

1.2 The Universals of Man's Mental as the Problem of the Study

My ponderings around the practical usability of the intuitive definitions, which I have presented above, led to the conclusion, that the mental of man must have some universal basic structures, which are common to all human beings. Knowledge, values, motivation, language, and culture are all terms whose referents are theoretical entities. There are a large amount of explicated theoretical entities postulated by the researches to explain their theories connected with my intuitive definitions. The number of implicit theoretical entities in use in different human sciences is still larger. The different views or their substance, structures, functions, and forms of existence have formed a continuous fighting arena for philosophers and human scientists. When I formulated my intuitive definition of knowledge I got some new ideas and impressions, which are connected to the term of **concept**. These thoughts encouraged me seek the common substance of these terms through the structures of the human concepts. I have taken the uncovering of these structures and their functions as the main problem of this study.

The theoretical entities such as knowledge, motivation, values, norms, and language are commonly assumed to have different kinds of **steering** [3]or **directing and controlling effects** on individuals' manifesting behaviour. Our thinking, planning, decision-making, and our will to achieve certain goals are not material entities though they evidently are **directing** our actions. If we accept that our values, norms, knowledge, motivation, and language are the main mental entities controlling our actions so we can ask, what is the common behind them? The main problem of this study is then the substance, structure, and functions of the human mental, which is assumed to control individuals' behaviour and actions. **The problem** can be formed into following question:

- What are the universal elements of man's mental and how their substance, structures and functions explain the **mental directability** or **steerability** of man?

What directs man is an age-old question, but it is still valid in all organisations and in their problems on different levels of organisational hierarchy. The managerial language swarms with terms referring to entities which, when not being materially manifesting, evidently must be mental of their substance. What kind of entities are our values, norms, principles, motivations, our strategical and operational plans and decisions, etc.? How can the used language mediate the meanings of the terms and expressions? One of the problem areas of this study is the steering power of organisational culture and the real role of language as a central part of it.

- What is our linguistic ability and what is its real role in the processes of controlling individual actors behaviour in organisations?

There is an everyday understanding that our brain is a necessary device for our thinking, planning, decision-making, and other mental actions and processes. How does our brain produce these services and other mental phenomena to us, seems still to be an open question in cognitive neuropsychology and brain research. From the managerial environment, one could move to the common area of human sciences and ask what is human knowledge and what are man's concepts and his consciousness. The main problem

---

[3] **Steering and steerability** are terms, which sound mechanical but are also appropriate terms in this study because the processual elements in our mental directing and controlling operations are often performed by unconscious brain processes. Our decisions range from reflexes to automatic, systematic, and creative. Thus, the verbs to steer, direct, and control and their derivatives will be in situation relevant use in this study.

of this study can be divided into elements with the following questions, which aim to make easier the later elaboration of it:

1. **What are the basic elements of Man's mental or his experiential world?**

2. **How these elements are connected with human knowledge, values, motivation, needs, linguistic abilities, and other mental states of man?**

3. **What are the roles these elements play in the conscious and/or processual planning and control of individual's manifesting speech and other motor actions?**

When handling these questions one needs a commitment to an acceptable solution of the ontological problem and a plausible set of other presuppositions connected with the subject of this study. I am presuming that man is mentally controlled biological, social, and rational actor. I shall briefly sketch these questions in Chapter 2 to outline a total picture of man. These questions will be elaborated more thoroughly in chapters 3 and 4 where the models of RA's concepts and RA's mind or his planning and control system will be described and explained.

1.3 The Purpose and goals of this Study.

The natural sciences are aiming at descriptions, explanations, and forecasts of the substance, structure, functions, and behaviour of their research objects. The human sciences are often trying to create an information and knowledge base, which aims to the **understanding** of the actions and behaviour of their research objects. The elements of the mental, which control the actions and interactions of human beings, are still so unexplained that you hardly can speak of explanations based on them. After the fifty years 'medieval darkness' of behaviourism in human sciences the reality of the human mental has slowly but surely been accepted. Introspection as a source of information has also been permitted the amnesty and mercy by human scientists.

The purpose of this study is to try to find the common mental denominator hiding in the four intuitive but useful definitions above and the theories in philosophy, psychology and other human sciences. The common factor could be the human concept, which was taken as the mental element in the intuitive definition of knowledge. If the substance, structure, and functions of concepts can be explained in a plausible way, it could form a tool or a set

of tools to comprehend what human knowledge, values, motivations, understanding, etc. are. Then they could also solve the problems and to answer the questions set above. This trial to delineate the universal system models of man, his concepts, and mind - seen as the mental planning and control system of man - is a vast and problematic one, but worth of trying. However, if one finds the atoms and molecules of the human mental, the task of delineating of the basic features of the human mental might be reduced to a reasonable size.

The model is aiming at a new conception of man's mental features. It will be based on the testable memory representations and concepts of man and on a new architecture of his[4] mind. The new model should be able to improve the level and quality of understanding human beings and their **ways of acting** in different kinds of organisational and other environments. As mentioned, the mental is here understood as the totality of the experienced descriptions of the being that individual actors - human and even animal - are and have been living through during their ontogenic histories. The mental is assumed to be an **emergent** product of our central and peripheral nervous systems. It can have a varying division between unconscious processes and conscious mental activities of sensing, perceiving, remembering, imagining, thinking, planning, decision-making etc., as will be seen later in Chapter 4.

The **goal** of this study is then to enhance the realistic understanding of **man's mental dirigibility** and the roles of the external and internal elements of the human **steerability** by using the RA-model of man as a base for explaining human **actions**. Our brain system seems to supply us also with the ability of experiencing the meanings of entities by connecting the value attributes to their actions, reactions, and changes. I am trying to formulate a model of human mental structures and functions that enable a **natural explanation** of these abilities and base it on **testable** memory representations our brains processes us for these purposes. Thus, I am trying to make a humble contribution to the everlasting work of **demystifying** the conceptions of the human mental. As mentioned above, this system model of human mind is here called the planning and control system of man or the **steering system of a rational actor**. I am assuming that, in the everyday language usage, the terms such as **mind**, **psyche,** and **soul** are referring to the same

[4] For the reasons of simplicity I shall use mostly only the masculine forms of the expressions referring to the third person.

theoretical entity. Steering system - as a new term in human sciences - may be less burdened by the old connotations of the traditional terms above. It would also be easier to say that individuals use their steering systems to create and maintain their plans and decisions, their self-image and identity, etc. than to say that it all just happens in subjects' minds.

1.4 The Main Outlines of the Study

This study is divided into eight chapters. **In this first chapter**, I have described the background, the problems, the goals, and the contents of the study. I will also briefly explain the nature, scope, method, and the focus of the research done. Each chapter has a certain task to aid this trial of solving the total problem of this study. It is a problem, which forms the challenge of finding the substance and role of human mental in search for means of the dirigibility or steerability of man and his actions in general and particularly in organisational circumstances.

Chapter 2 aims at a brief delineation of a system model of man. The model presents man and his environment and the exchanges and interaction between them. The presentation is based on a **collection** of the problem related results and beliefs of natural and human sciences and philosophy. They are results, which are commonly taken for granted and so they form the basis of this study. For these purposes, man is outlined as a mentally controlled, biological, social, and rational actor. To form a preliminary total picture of the object of research, the postulated entities of man's concepts and steering system and their roles are briefly described. At the end I present the hypotheses of this research endeavour.

In chapter 3, I shall postulate the system structure of the human concept. **Concepts** will be seen as a situation relevantly recalled sets of attributes of the memory representation of an object of attention. They can be singular material particulars and their systems, happenings and changes in different types of situations, or linguistic expressions referring either material or mental entities. Thus, concepts are different sets or collections of memory representations of entities of the being as postulated in cognitive psychology. They are assumed to be stored in our long-term memory from where a situation relevant set of them and their attributes can be recalled into our working memory, where they function

as mental tools for conscious mental operations and reviewing to make the sensed understood.

In chapter 4, I shall first describe the structure and functions of RA's mind or his planning and control system with its frame and its central part called SCES. There are four main types of RA's views, which form the framing elements of man's mental steering system. **Views** are collections of subject's concepts and conceptions of the world, his roles, resources, situations, and actions. They are processed during individual's ontogenic history as content of his long-term memory. The centre of RA's steering system is formed by **the scene of experiencing and steering**, SCES in short. The mental space of SCES subsists in RA's working memory. The capacity of working memory is limited but its content can be changed rapidly, which enables the conscious review of objects of attention and the processes of thinking and decision-making. The end product of chapters 3 and 4 form a new architecture of man's mind or the system model of **RA's planning and control system** with its mental tools for concept-based understanding and steering.

In **chapter 5,** I have used the RA-model as **a metatheory** to review some basic theories of psychology connected with the intuitive definitions described above. They are connected with human perception, knowledge, motivation, values, norms, and language. How do the dichotomies like tacit – explicit, implicit - explicit, declarative - procedural, or know-that and know-how refer to the phenomenon, which in the RA-model are seen as the varying **degrees and levels of conscious or concept-based and processual steering** of actions on RA's scene of experiencing and steering.

In **chapter 6,** I have reviewed some of the age-old problems of philosophy through the RA-model. I am claiming – like Wittgenstein - that many of the everlasting philosophical problems are based on misuse of language. Many of these problems can be approached from the psychological point of view, which might give more trustworthy results than the traditional argumentation procedures in philosophy. Cognitive neuropsychology and empirical brain and memory research offer some facts and theories, which can help to see some of the philosophical problems anew.

In Chapter 7, I have reviewed briefly the first intuitive definition of human action. I shall limit my review to the term steered and its role and meaning as an element of vast totality of human actions. The analysis of the term steered - or planned and controlled - in the definition reveals the structure of human actions. It describes man as a strategic planner

who tries to optimise the way one is adapting into the changes in one's environment. The main phases of situation-oriented planning and execution of conscious human operations are seen as adaptations to the prevailing environmental conditions. The presented model of action collects the main elements of human actions framing some of the problems of a psychological theory of action. At the end of Chapter 7 I shall briefly review the special features of the RA-model of action.

In **Chapter 8** I have briefly discussed about RA-model's usability to some problems of psychology and philosophy, which fall out of my original scope of the study. I make some notes of how the behaviouristic and cognitivistic approaches can be seen through the RA-model. Similarili I review the processes of emotion, qualia, learning, and free will via the meta-model.

In Chapter 9, I have collected the results of the study by reviewing the ways the RA-model solves the problems and questions of set in Chapter 1 and some other problems, which became actual during the process of this study. I am pondering the possible contributions of the RA-model and its universals could offer to human sciences, philosophy, and management. The RA-model could be used as a beginning of a new and openly mental approach to man as a biological, social, and mentally controlled rational actor. Further studies will be needed to show whether the RA-model and its atoms and molecules of the human mental can advance the understanding of man as research object of the human sciences, philosophy, and managerial studies and practices.

1.5 About the Scope and Method of the Study

The problem of finding the core-substance and the basic structures and functions of the mental of man has faced many reformulations during the long process of this study. It ended with this trial to sketch a **picture** of the main features of the human mental. I took a deliberate risk of sinking in the difficulties of being superficial when I decided to try to sketch a total picture of the human mental and its main structures and functions. The temptation to find a unified explanation ground for the gigantic richness of the human experienced world and its materially manifesting features led to this risky study project.

As a part of my approach to the research problem, is the formulation of my **ontological position**, which will take place in Chapter 2. I have assumed that the being is all what

exists or subsists and the being is composed of material and mental entities. The material manifests in space, state, and phase dimensions as function of time. However, its existence does not depend on any actor's existence because actors can effect only on its form, not its substance that are fixed in the processes of stars of our Universe. Even the organic processes in the living animals and plants change only the manifesting combinations and forms of the elements of the material.

The emergent processes of our brain systems, in turn form the mental, or the experienced world of ours. They can be on-line sensations - or imaginations - of the actors' objects of attention or mental states caused by the situation relevant concepts. The keys to solve the problems of the human mental will be found in the basic elements or in the 'atoms and molecules' of it. Our sensations and their interpretations by our concepts and views are our memory representations of entities of the being form the elements of our mental. Thus they are also objects of introspection, everyday thinking, and empirical memory research.

The **method** of finding the structures of human concepts could possibly be called as conceptual analysis in its very basic meaning. The quarks, atoms, and molecules of the human mental can be seen as metaphors[5] of the postulated elements of it. The idea being that analysis may reveal the basic substance and the functional abilities of an entity. If you know the elements of an entity and the forces and interactions between them you can understand the totality. In fact, it seems that all scientific approaches consist of phases of analysis, synthesis, inductions, deductions, and abductions in the process of the creation of new models for the entities of the material or mental worlds. So has happened also in the formation of the models of RA's concepts and mind. To see human concepts as dynamic and situation relevantly recalled sets of memory representations and their attributes enabled to find a realistic substance, structure, and functions for them. Concepts, conceptions, and views enabled to build a metaphorical description of the human mind and its centre as the scene of experiencing and steering. It is in the mental space where we live through the different qualities, levels, intensities, and durations of our experiences. The value attributes, processed into our concepts, seem to offer a natural base for the mental forces steering our actions.

---

[5] Metaphors are in the RA-model seen as figurative descriptions of referents of theoretical terms without materially manifesting object.

2. RATIONAL ACTOR, RA, AS A SYSTEM MODEL OF MAN

2.1 The Basic Presumptions of the Study

All research work - striving toward scientifically relevant results - needs invariable grounds and firm premises for its operations and argumentation. According to Aristotle, science is based on axioms or premises, which are intuitively and necessarily true. Theorems and consequences are then logical truths due the syllogistic deductions from the axioms or premises (Henrik v. Wright 1968). The foundations of the modern science are usually theories or beliefs, which are taken for granted by the researcher and the scientific community or communities, to which the researcher belongs as a member. After Thomas Kuhn's The Structure of Scientific Revolutions (1962), these collections of beliefs are often called paradigms. According to Kuhn, paradigms direct and guide researcher's thinking, methodology, and the ways the practical research work is planned and performed. Paradigms, as sets of beliefs, have their own dynamics; they are born and formulated, live their normal phases, are faced with anomalies, are changed, and are sometimes changed revolutionary.

This study is based in broad outline on the views of critical scientific realism and pragmatic common sense. I respect also the wisdom of our everyday thinking and language, because I recall often G.E. Moore's assumption that …"wherever philosophy comes into conflict with common sense it is almost certainly wrong". Our everyday language is full of theoretical terms, whose referents must exist somewhere or 'subsist'[6] in the human mental. Their reality and causal effects to individuals' behaviour is accepted in scientific realism. The other or the main feature in scientific realism is that besides individuals' inner - cognitive, emotional, volitive, etc. – experiences, there is an outer reality, the existence of which does not depend on the existence of human or any other observer. This is assumed also in the theory of evolution. Its physical phase is assumed to have obtained its origin or genesis with the Big Bang. The Big Bang is seen as one possible genesis or beginning of our universe and its evolutionary processes about 12 to 15 billion years ago. Its continuous processes has had advances or 'progressions' also in our Globe from physical and chemical to biological and

[6] **Subsistence** is here seen as the form, in which our mentally experienced descriptions of the being - or the products of our brain's emergent processes - exist, privately only to us, though certain but varying degrees of intersubjetivity appears. Sensations, perceptions, memory representations, cognitions, emotions, and volitions are examples of the subsisting mental entities and mental states.

cultural phases to the present state of the history where Homo Sapience is wondering at his origin, present state, and the future, (Darwin 1859/1986, Durham 1991, Hawking 1988, 1998).

I am not problematizing time or space in which our actions take place. In our normal conscious mental states we are situation and time oriented to the actual environment and the entities and their meanings. Physical time can be seen as a series or a continuum of intervals between the consecutive sequences of oscillating or otherwise cyclic phenomena in nature. Our Universe and its material elements hardly have time as an experienced entity, only a processually regulated and law-like continuum of sequences of different macro and micro series of happenings, which cause changes in the observable world. I believe also that the 32768 consecutive oscillations in the quarts crystal of my wrist watch form together a step, whose approximate duration is one second in the continuum measuring time. If we take the sum of these steps 60x60x24=84600 times, we get the time of a mean solar day measured in seconds.

In the RA-model of Man, I assume that the evolutionary processes has formed the human memory abilities and the time lines in man's memory representations and concepts, as explained in Chapter 3. The human memory structures - such as long-term memory and working memory (Baddeley, 1997) - have enabled man’s adaptation to the sequential metabolic processes of human body and the sequence-bound variations of light and dark hours, cold, warm, dry, or rainy seasons, weather and temperature changes, availability of food and shelter, etc.

According to critical scientific realism, as presented by Niiniluoto (1980, 1983, 1999 a), Tuomela (1983), Bunge (1977,1979), the best explaining theories of sciences are approaching the true or truth-like explanation of their research objects and their relations with their environments. Thus, also the theoretical entities, postulated in these best explaining theories, are real entities and can have causal effects. In the RA-model I am assuming that the theoretical entities are 'subsisting' or subjectively existing, which means that they are mentally experienced entities. Consequently, the atoms, protons, quarks, electrons, and neutrinos have an existence - in time-, space-, state-, and phase dimensions. The elements of material entities are used as explanations of their reality, when the physicists are trying to explain the real substance of matter. Analogically our memory representations, concepts, roles, sensations, emotions, volitions, and motivational states are really subsisting entities when psychologists try to explain the real substance of the human mind and its phenomenal elements. Individuals use these entities to plan and control their mental states and overt behaviour.

According to a pragmatist's thinking - Peirce, James, Dewey - one could say, that the best explaining theories are approaching the situation-relevant and working descriptions and explanations of their objects. This reservation is based on the factual situation that there is not any universally accepted theory of truth, though the theories of truthlikeness, correspondence, and coherence are often referred. Sometimes the best explaining theories give even possibilities to forecast or predict the reactions, actions, or behaviour of their objects in certain situations.

Often deduction is seen as truth preserving method to infer scientific conclusion. Sometimes our thinking actions and processes in a research work seem to fluctuate between induction and deduction, analysis and synthesis, between a total and detailed models in the trials to find a satisfactory fit between the elements of the final explanation of the research problem (Nagel 1971).

One could also say that observations and existing theories in human sciences could be used to abduct (ab = from, ducere = to lead) a meta-model of man. According to Niiniluoto (1999 b) abductions, though fallible, can be seen as truth conducive and inferential practices. The RA-model of man is here seen as meta-model which possibly can ease the understanding of man and his different features, which often are implicitly in many theories of human sciences. The basic facts, ontology, structure, and functions of the material and mental features of man, postulated in this study, are briefly described along with the element of the RA-model of man in the next sections and in Figures 2.1, 2.2, and 2.3.

2.2 The main Features of the RA-model

The main task of Chapter 2 is then to sketch a preliminary system model of the totality of man. According to Eino Kaila you can understand the elements of an entity better, if you have acquired a conception of the totality, a total picture, or a gestalt to which the elements belong (Kaila 1952, 29). Also Rauhala (1993) and Saariluoma (1996) assume, that we need a 'pre-conception' of man to comprehend the roles of the researched details or features of man. The object of this study is to find the basic elements of the human mental, which create the structures and functions of the manifesting and mental features in man's actions. A brief delineation of man's totality might help to see the elements and vice versa.

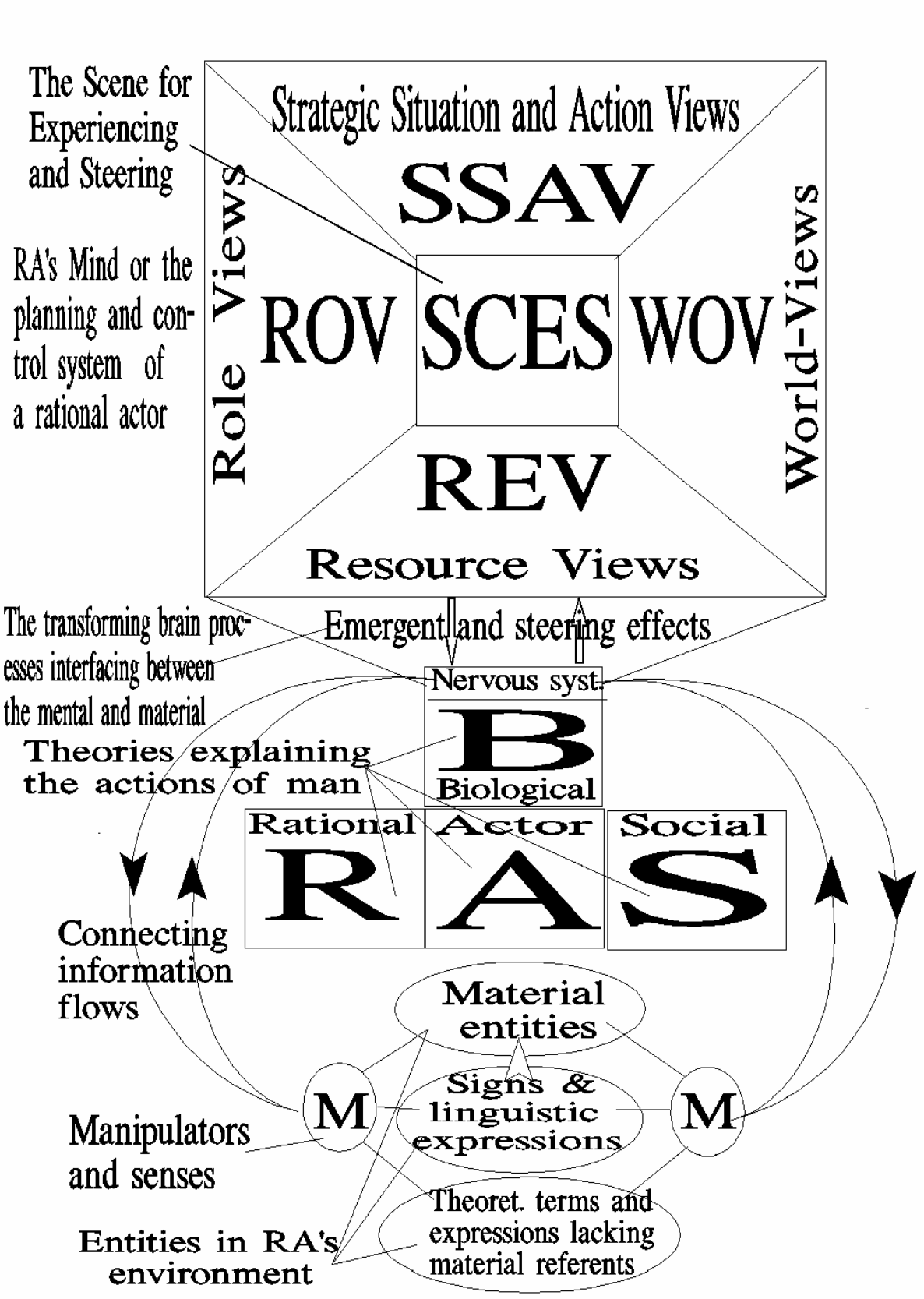


Figure 2.1 The System Description of a Rational Actor and his Environment

The RA-model is presented in Figure 2.1 on the previous page. It is based on the results of the problems related natural and human sciences and my realistic philosophical position as presented above. According to that position the being is formed of material or space-time oriented entities and mentally subsisting entities, see Figures 2.1 and 2.3. One prerequisite is our brain's ability to process the emergent and steering transformations between material messages and mental experiences and vice versa as will be explained later. The mental entities subsist through our brain's abilities to offer us the structures and functions of our **long-term and working memory** as postulated researched in cognitive psychology (Baddeley 1997).

The name of this model of man is **rational actor**, **RA**. I assume that a great enough majority of man's actions and reactions are based on situation relevant planning and decision-making, which aim at securing actor's own, his relatives' and his communities' survival and well being. The RA-model of man tries to present a simplified but total picture of man. It describes briefly both man's material and mental features and the structures and functions, which connect him to his material and mental environments. Figure 2.1 presents **man's basic substance** as mentally controlled biological, social, and rational **actor**. These dimensions of man are here seen as products of the physical, chemical, biological, social, and cultural evolutions. These basic dimensions get their special features by each individual's experiences, which one has lived through during one's ontogenic history.

Besides the truth-like results of sciences the RA-model is built on the two postulations, which I shall present in Chapters 3 and 4. They will delineate the memory based structures and functions of human concepts and human mind. I take it for granted that the testable and by introspection and everyday thinking reachable memory representations are these mental entities, which can hold - besides different beliefs - also truth-like descriptions of the entities of the being. Even though, the recalled parts of our memory representations describing the objects of attention can be erroneous, they usually are situation relevant ones. **In this study concepts are seen as the situation relevantly recalled set of memory representations and their attributes to explain the sensed or imagined descriptions of the being**. The structure and functions of man's concepts are postulated in Chapter 3.

RA's **mental head** in figure 2.1 is framed with RA's memory representations or views of the world, of his roles, resources, situations and actions. They form the frames and basic elements of **human mind,** which is seen as the mental planning and control system or the steering system of man. Its role is to offer man the image of the world and of oneself, of environment and its changes, and the directing power of ones actions and reactions to happenings and

changes in his environment. The central element of man's mind is **SCES** or the scene of experiencing and steering. Its structure and functions will be explained in Chapter 4, where the structural frames of the human mind are built of our memory representations. They are built during our ontogenic histories and the experiences from the situations and actions we have lived through in our roles in the communities of which we have been members.

I am assuming that the above-sketched descriptions of RA's concepts and experiencings are descriptions of mental universals. They are needed to build an understandable and holistic model of man and his mind as a system. This in turn is necessary for the rational planning and control of the manifesting speech and other motor actions. Though their detailed structures and functions will be described in Chapters 3 and 4, I am using these two brief sketches of the postulations as tools to formulate the RA-model and the formulation of the hypothesis of this study searching the common denominator implicitly in the four intuitive definitions presented in the introductory Chapter 1. The system model of Rational Actor, RA, in Figure 2.1 is composed of fife structural and functional elements. I shall describe them briefly in the next sections and begin it by RA's material environment.

2.3 RA’s Material Environment

2.3.1 RA's Manipulators as encoders and effectors

A schematic presentation of the RA-model is in Figure 2.1. The structure of the RA-model of man collects different items, facts, aspects, and considerations, which are taken for granted, or postulated, or presented as hypothesis of this study. The RA-model presents human beings as dynamic and open systems having exchanges of material, energy, and **information**[7] with their environment, Bertanlanffy 1968. The figure illustrates the three main areas and the double channel linking system between the mental and the material elements of man and his material environment.

---

[7] **Information** is here seen as structured or **in form set material or energy**, which our senses can encode and our brain systems interpret 'directly' or by different types of help devices. Examples of them are written or spoken linguistic expressions, encoded electro-magnetic messages in intra-, extra-, or inter-nets or electro-chemical afferent or efferent action potentials in the brain's neuronal nets, or the molecular structures on the receptor parts of the synaptic caps of neurons.

On the bottom of the figure 2.1 is a schematic description of RA's material environment formed of material entities, signs and linguistic expressions referring to them, and theoretical terms having no materially manifesting referents. RA's manipulators - in figure 2.1 - have connecting lines with these expressions referring to them.

RA's manipulators represent both all of our senses - encoding the outer and inner energies we receive - and all our organs manifesting our speech and other motor actions, reactions, and overt behaviour as mentioned above. During the wakeful time, our manipulators are assumed to be in continuous state of readiness or on standby. They have to be able to collect all the energies delivered by the entities at the reach of them. They have to have similar preparedness also for actions and reactions if the situation makes them necessary, (Kolb & Wihshaw 1996). Thus, RA's Manipulators have two roles in the RA-model of man:

- They are encoding the outer and inner energies into afferent action potentials, which our brains then interpret as situation descriptions of the world or our body. Thus, they initiate the transformation processes in which the material outer world and its change are conversed into mentally experienced descriptions of them.

- The other task of manipulators is to perform all the speech and other motor actions, reactions and expressions decided and steered through the mental actions and processes (Kolb & Wihshaw 1996). This other task is the end result of the transformation process in which the mental is conversed into materially manifesting actions and gestural or mimic expressions etc.

2.3.2 The Dimensions of Materially Manifesting Entities.

Material entities form the first type of entities in RA's environment. They are assumed to be singular particulars, their systems, or their physical or corporeal interactions with other entities of the being. Though sciences do not know what material is, we are justified to assume that all material entities with which we can interact manifest - at least partly - in space, state, or phase dimensions as function of time, see Figure 2.3.

A singular material entity can vary in size from neutrinos, quarks, electrons, photons, protons, neutrons, atoms, and molecules to the organic and inorganic entities of the planet Earth and other material entities of our universe. The Earth in turn is a planet in our solar system, whose centre - or our Sun - is just one star of the Milky Way galaxy in our universe. This in turn is only one of billions of galaxies forming the archipelagos of galaxies formed of stars, gaseous

formations, and black holes and situated here and there in our universe. From most of the material entities - important for our everyday well-being - man can get sense based information 'directly' or with the aid of different kinds of equipment. If the delivered energy - carrying the information from the object - surpasses the threshold value of intensity needed for our senses, it may be receivable through some of our senses (Hawking 1988, Enquist 1999, Kolb & Wihshaw 1996).

One important group of information is carried by the electromagnetic waves or flow of photons and one another by the acoustic waves through air. Pheromones and other olfactory material floating in air are forming the third media importing information of remote objects. They all together offer encoding work for our visual, auditory, and olfactory senses also from temporally or locally distant entities. The encoded olfactory information from our nose goes directly to the cortex to be immediately interpreted into descriptions of the source, intensity, quality, freshness, edibility, and other meanings of the sensed smell. In the processes of evolution, the ability to interpret the meanings of the information received from remote objects of attention has evidently had important function for survival and well being of individuals and species.

2.3.3 Signs and Symbols Referring to the Material

The second type of material entities are signs, symbols, special terms, words, and sentences, which have materially manifesting entities as their reference. As will be seen in Chapters 3 and 4, all signs in the RA-model are assumed to be material entities or their sensory perceptible qualities and features. Thus, they can be processed as sense based search attributes into subject's memory representation of the object entity in question. Thus, a visual, auditory, tactile, or olfactory feature of a person or any entity can function as a reminder or as a **search attribute** in the memory representation of the object entity. Objects' names and other linguistic expressions connected to it form an important set of the sense-based search attributes in our memory representations and concepts. They enable the linguistic abilities and communicative actions of man. The search attributes are assumed to be able to recall the situation relevant memory representations of the object entities into subject's working memory for conscious review. So, the voice in telephone, or the scent of a familiar perfume, or the way one walks can remind us of a friend or a person we know.

2.3.4 Signs and Symbols Lacking the Materially Manifesting Referents

Signs, terms and sentences having no materially manifesting referents form the third group of material entities. Terms like psyche, soul, spirit, mind, motivation, organisation, value, norm, concept, language, culture, etc., are so-called theoretical terms. They are referring to entities about which we cannot make any direct observations, though they are commonly used in our everyday communications. The referents of the theoretical terms in the RA-model are assumed to have their mental existence, or briefly, subsistence. According to my ontological position theoretical entities are subsisting and then individual and subjective memory representations of the entities to which the terms are referring. It is quite evident - one can assume - that these terms must have, at least partly, intersubjectively shared and understood mental referents.

As will be explained in Chapter 3, the memory representations of theoretical entities are lacking other sense-based attributes apart from their name or other linguistic or otherwise symbolic attributes. The concepts of theoretical entities are then just collections of structural attributes to which their names refer. Thus theoretical entities can have only subsitence, whose degree of intersubjectivity varies though different kinds of conceptualations are used increase the conformity of them. In practice, the meanings of theoretical entities are just defined by using other, already known terms (Niiniluoto 1980). Conceptualations can now be seen as a trial to build a set of structural attributes describing the different features of the referents of terms referring to theoretical or material entities.

The lacking sense based attributes of theoretical entities are often replaced by different kinds of metaphors. The participants of the labour market negotiations are sometimes sailing or rowing in the same boat. Another example of this is the use of our solar system as a model of an atom. In our solar system, the Sun represents atom’s nuclear and the planets its electrons. The use of theoretical terms in everyday language is clear evidence that there is a certain - though varying - degree of **intersubjectivity** in the ways the referents of these terms are interpreted between members of scientific and other communities, organisations, and cultures.

2.3.5 Signs, Symbols, and Human Language

Signs, symbols, and sentences form thus a special type or class of material entities, which are able - through our linguistic ability - to refer to other entities that can be:

- Materially existing singular entities like stones, houses, cars, people, animals, their actions, reactions, their systems, interactions, exchanges, or changes in some of their qualities or dimensions.

- Mentally subsisting entities or mental states like sensations, perceptions, emotions, values, motivations, norms, memory representations of singular entities or their systems and interactions, and images describing the previous, etc. They have their space, phase, state, and meanings as function of time only in human mind in its experiencing processes. They in turn have their areas or qualities, levels, intensities, and durations as dimensions of man's scene of experiencing and steering as will be described in Chapter 4.

At the same time, signs, symbols, words, and sentences are the manifesting elements of our natural or formal languages. They are expressions of our linguistic abilities that give us the mental freedom to move in our discussions and communications in time and space, state, and phase dimensions of the entities of our attention. It enables us to locate the actions, events, and changes on the proper point of the time line on which we have been living, or are just living, or will be living in the future. How this everyday experience of our linguistic abilities can be described and understood through the RA-model of man, will be briefly discussed in Chapters 3, 4, and 5. Utilising the hypothetical mental system structures of concepts and the scene of experiencing and steering will help to outline the process. RA's concepts and his planning and control system with its SCES are assumed to be our main mental tools for the conscious and even subconscious steering of our manifesting speech and other motor actions.

2.4 RA’s Duplex Link between the Material and the Mental

2.4.1 RA's Afferent Action Potentials and the Emergent Channel

As explained above RA's manipulators and the symbolic arcs in figure 2.1 form one part of the duplex linking-system between the material and the mental in the RA-model. The arcs are referring to the message lines - formed by the peripheral nervous system - between RA’s sense organs and his central nervous system. Our senses and effectors - our executing organs - are depicted here as RA’s manipulators. There are two manipulators because we all – as products of evolutionary processes – have a symmetric structure and then we usually have two eyes, ears, and nostrils, two hands and feet, and there are sides also in our genitals. The

two manipulators of RA with their connections to RA's central nervous system form thus the second area of RA-model.

According to the cognitive neuropsychology man's only material connections to the outer world are the afferent and efferent action potentials. They are formed of the electro-chemical pulses mediating between the existing material and the experienced mental. The afferent action potentials - encoded by the manipulators (senses) - are transporting the flow of electrochemical pulses or signs. They carry the encoded information through the peripheral nervous system to the central nervous system. In the next phases of the process it will be interpreted into short-lived sensory memories, sensations, and perceptions of the entities in our environment (Neisser 1982, Kolb & Wihshaw 1996 pp 93-119, Uusitalo 1997). In the RA-model I am assuming that our sensory memories and sensations are determined primarily by the phylogenically formed neuronal structures. They seem to offer a **continuous and on line connections** to our environment and its changes. Our sensations and perceptions are then products of our brain's emergent transformation processes. In our experiencings we are at the mercy of our brain's abilities to process the encoded afferent action potentials into our mental experiences.

According to Haffenden & al (1998), this transformation processing of our visual information needs the **dorsal and ventral streams** in our brains. The former is an on-line connection to our environment and the latter or the ventral stream is needed to explain the meanings of the sensed. The **ventral stream** uses the memory representations of the observed entity to explain its actual and situation relevant meanings. The memory representations are assumed to mediate and carry descriptions of entities of our environment and their changes and meanings to us in the actual situation. The interpretations of meanings are based on the memories from the past and on the speculations of the expected future. The actuality we experience can be seen as a mental state between the remembered past and expected future and having elements of both of them (Kolb & Whishaw 1996, Milner & al. 1995, Haffenden & al. 1998).

In this study, I call this transformation process as the **emergent effect or emergence**. The emergent effect is the factual transforming process in which the afferent action potentials - coded by our senses or by RA's manipulators – are converted into our processes of experiencing sensations, perceptions etc. These experiencings are formed of different levels, intensities, and durations of cognitive, emotional, volitive, or motivational experiences. In the RA-model, they are lived through on the scene of experiencing and steering or on RA's SCES – see Chapter 4.

In the RA-model, I am assuming that an analogical double stream exist on all sensory areas. The on line interpretation stream needs the connections to the earlier experienced memory representations to be understood. Building on the results of Ungerleider & Mishkin (1982), Millner & al (1995), Haffenden & al (1998) and on the postulations in the RA-model, we evidently can state that the phylogenically steered formations of our sensations are interpreted by the ontogenically formed and dynamically maintained memory representations creating our perceptions. **Perceptions** are then memory based and situation relevant interpretations of the attended object of interest and its meanings to us.

Basing on the results of cognitive neuropsychology we can now assume that the chain of interpreting processes of the afferent action potentials in our central nervous system has the following phases:

- We possibly become **pre-aware** about the material entities whose energy is striking our senses and causing the momentary **sensory memories**.

- We become **aware** about sensations, which our **attention process** has selected of the available sensory memories and leading to sensations of the situation relevant events and changes in our environment (compare with OE gew(r and German gewahr = watchful). It happens by selecting the proper flow of afferent action potentials of which our **sensations** are then processed (Näätänen 1992).

- We become **conscious** of the objects of attention of which the sensations manage to recall the situation relevant concepts to explain the meanings of the sensed, Chapter 3 and 4.

- Thus, our sensory memories as mental **pre-primitives** function as initiators, which lead to the chain of consecutive mental processes of attention, sensation, perception, naming the object, understanding its meanings, etc. (Kolb & Whishaw 1996).

In the RA-model I am assuming that we are **aware** of our **sensations** or of our mental primitives but become **conscious** of those attended entities of which we are forming a concept-based explanation in our working memory. The sensations are assumed to act as **search attributes** recalling a proper set of concepts and their attributes to create the mental state of perceiving and knowing, which makes the sensed understood, as will be explained in detail in Chapters 3 and 4, where the structures and functions of RA's mental will be postulated.

The above accords with the functions of the dorsal and ventral streams of Haffenden & al. In these processes, the dorsal stream of the visual information processing is used for the **on line production** of the sensed descriptions of the object of attention. The ventral stream is connecting the sensed with the remembered. Thereby, the **ventral stream** is creating the mental state of concept-based perception and the **conscious reviewing** of the object entity (Ungerleider & Mishkin 1982, Kolb & Whishaw 1996, Goodale & Milner 1995, Milner & al 1997, Haffenden & Goodale 1998). From the evolutionary point of view, the both streams are and have been necessary for the survival of species.

The above explanation has some analogy with the Hanson's (1959) claim that perceptions are theory laden. If we see full-grown concepts as theories, all perceptions are theory laden. We see what we understand and we understand entities about which we have or can build memory representations and concepts. It has some connections also with the time lack of 300 to 500 ms, which is used to become conscious of the object of attention after the sensory signal has reached the relevant area of cortex in different tests (Hari 1992)

Together the two streams are creating the basis of the emergent transformation process, in which the afferent action potentials are converted into experienced mental descriptions of the object of attention. These descriptions include its value attributes explaining its meanings in the actual situation as will be explained in Chapters 3 and 4. The **phenomenal** is then a product of this emergent transformation process of our brains.

My forefingers 'know' that they are on the right keys by getting touch on the special marks on F and J keys. I am aware but hardly conscious of this. The checking of the positions of forefingers happens automatically when I am beginning my writing operations with my computer using the touch type system. I become conscious of the position of my fingers first if the letters appearing on the monitor are not the correct ones.

I have taken **sensations** as phylogenically determined **mental atoms** of which we become aware or preconscious. Sensations form our real time and situation relevant connections to our environment, which we need for all of our everyday activities. Mika Häkkinen's World Masterships with his Formula 1 would hardly be possible if there were long time lacks between the sensed and the interpreted visual information encoded by his eyes. The situation view of the nature and quality of the racetrack – recalled from his long-term memory - functions as the interpreting frame for the information encoded by his eyes and interpreted by his brain system. Obviously, we all need the quickly functioning and reality-bound

connections to our environment and situation related sets of interpreting memory representations in our SCES or on the scene of experiencing and steering having its mental space in our working memory as will be explained in Chapter 4.

Thus, the second phase of the process producing our perceptions is assumed to be determined by the recalled set of attributes of our memory representations or our concepts connecting the sensed information with our past experiences. In the RA-model our **concepts** are assumed to be formed processually during individuals ontogenic histories. RA's situation models are assumed to form the dynamic frames of interpretations of the primary information encoded and delivered by our senses; RA seems to be a situation oriented being. I am assuming that our phylogenic and ontogenic histories have formed the steering system of monitoring or experiencing the processes of our sensations and perceptions as described above and as will be reviewed more detailed in Chapters 3 and 4. In the evolutionary processes, those who have been able to utilise one's earlier experiences to interpret the meanings of the sensed, have survived with higher probability.

2.4.2 RA's Efferent Action Potentials and the Steering Effect

The efferent action potentials in turn are transporting the commands or a proper flow of sets of electrochemical impulses from central nervous system through the peripheral nervous system to the manipulators. There they will be manifested as the wanted flow of speech or some other motor actions. We are not conscious of these processes happening in our nervous systems, but we are conscious about the outcomes they are causing. We are conscious also of our values, intentions, goals, plans, and the decisions we are taking, which in turn cause the flows of efferent action potentials. Thus, the mental and the unconscious brain processes are producing the flows of efferent action potentials, which act as the causal steering effects that produce the wanted – sometimes also unwanted - speech or some other motor actions.

This process of our brain system performs the other transformation between the mental and material. I am calling it as the **steering effect** or **re-emergence**, because it produces the manifesting material expressions from the subjectively experienced mental thoughts and decisions. Though we don't in detail know how our brains produce the processes connected with the steering effect, we know it happens. In practice we become conscious of the actions and the other possible outcomes these processes of steering effect (Kolb & Wihshaw, 1996).

We can perceive our own speech and other motor actions and control their production according to the differences between the aimed model or goal and the achieved performance.

2.5 The Three Dimensions of RA's Manifesting Actions.

2.5.1 RA's Ability to Situation Orientation

The third area of RA-model is presented in Figure 2.2, which is the centre part of the figure 2.1 presented more detailed. There are four capital letters in the middle of RA-model referring to the main dimensions of man's actions. The letter A in the middle refers to RA's substance and central feature, which is his agency. RA's agency has the three dimensions, which are describing the rational, social, and biological features of man. Already Aristotle discovered these main dimensions of man, when he was describing man as rational and social animal. The three areas of features of man are assumed to be manifesting in all of man's actions and reactions. Man's central feature is his ability to adapt oneself into his environment and to its changes. This is assumed to happen through man's goal oriented, planned, and - at least partly - rational actions. This competence can be seen as an utterly necessary ability for men's - and all actors' - survival.

The main tool in this adaptation process is man's ability to situation and goal-oriented actions. With rational actions, actors are able to exploit some of the actual possibilities in their environment and avoid most of its threats. The common objects of human sciences are in one way or other connected with human actions. The central problem area in actions is formed by the question how they are planned and controlled. The general aim is often - at least implicitly - to reveal the invariant rules according which the mentally experienced planning and decision-making are steered and how the mental is then steering[8] the materially manifesting executions of the planned actions and activities. Thus, this shared object stimulates the research among other things in economics, in political sciences, and in organisations where the aim is to improve the ways of managing the economical and human resources needed and used in them. Man is often seen as the 'most important resource' of the organisation. The

[8] **Steer and steering** are terms, which sound mechanical but are used in this study as expressions, which refer to the mental control in which the processual and unconscious elements are in a considerable role. Reflexes are examples of this automaticity of production of efferent action potentials steering motor actions.

problem of guiding individuals to understand the goals of the organisation and to find them as valuable and situation related is then one of the primary tasks of any manager and leader. This is more probable in organisations in which the organisational values and norms are commonly adopted and a collective language enables fluent communication between individuals in different positions in the organisation.

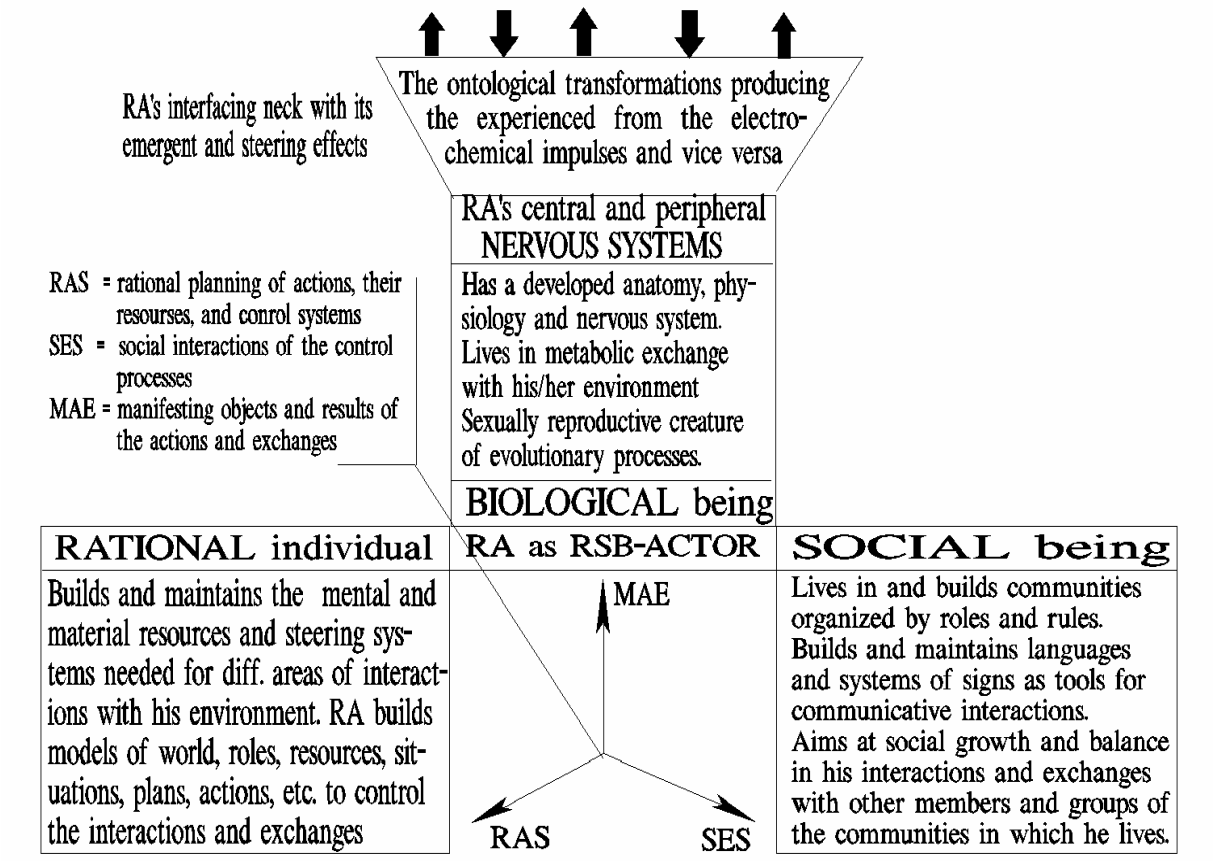


Figure 2.2 The Rational, Social, and Biological Dimensions of RA and His Actions

2.5.2 RA as a Biological Being

The bodily dimensions of RA form the material base for his actions. The evolutionary processes have created these resources. I shall briefly list some of the main biological features of man as the basis of his activities, Figure 2.2.

As a biological being, RA has the phylogenically based and ontogenically completed:

- Central and peripheral nervous systems, CPNS in short, which form those parts of man's biological and material substance that shape the basis of man's mental substance and his mental steering system as was assumed in the previous. The dorsal and ventral streams of visual information and the mirror neurons in our brains exemplify the ways our brain

system enables our 'direct' or on-line and memory-line interfaces with our environments and the explanation of our learning processes.

- An anatomy and physiology, which form the physical resources for man's mental and mentally steered actions and activities. At the same time RA's material and biological structure and functions form the bases for:

- The necessity of metabolic balance which creates the needs manifesting in feelings of being hungry, thirsty, or having other experiences leading to changes in man's behaviour and actions aiming at the satisfaction of one's metabolic needs.

- Sexual needs and sexually reproductive capacities as a creature of the biological evolutionary processes. This feature evidently is necessary in aiming at the survival of man as a species.

2.5.3 RA as a Social Being

The reproduction process is the biological feature, which in turn has led to many of the social features found in RA's behaviour. I limit the list of them to the naming of the most common areas of social life relevant in this study:

- RA builds and maintains linguistic signs and systems as tools for communicative actions. This has evidently increased man's abilities to survive as an individual and species. In Chapters 3 and 5, the connections between RA's concepts and his linguistic abilities will be postulated and briefly discussed.

- RA builds and lives in communities organised often by hierarchies of social, economical, and political institutions and roles of individuals as members in them.

- In accordance with their roles, individuals adopt the rules of interactions and exchanges between the members of the communities to which they belong. A pressure to adopt the values and norms, duties and rights often mediates the orienting rules for individuals. The rules often create in individuals a need of a balanced exchange of material and mental entities with the community and its members. These rules are guiding the majority of the members of the communities with which he/she is living, though dissidents exist always.

2.5.4 RA as a Rational Individual

RA's rationality as well as his sociality can be seen as features manifesting in individuals' interactions and exchanges with other members of the communities in which one is living. Rationality is often seen as those features of plans and actions, which promote the possibilities to achieve the goals set for the action or activities. These rational features are here seen as results of individual's mental capacities. They are performing and aiding the planning and control processes and actions connected with man's goal oriented behaviour.

These features are assumed to be grown from the phylogenic and ontogenic histories of individuals and species as mentioned above. Individuals are bound in some measure to the abilities their genomes have mediated but they can plan and direct their ontogenic curricula and achievements in the course of it.

2.5.4.1 Some Phylogenic Features in RA's Rationality

One can hardly maintain that the evolutionary processes have some goals or purposes. Even so, if the survival of human kind is seen as one of the results of the evolutionary processes of man, then the structures advancing this can be seen as entities enabling and serving rational thinking, planning, decision making, and acting. There can be found some rational features in the processual formations of RA's concepts as will be seen in Chapters 3 and 4.

Although an individual's rationality is mostly seen as a result of his ontogenic history and manifestation of his curriculum – education, work experiences, identity, personality, etc. - it has a strong phylogenic and processual background. Here just some features of the 'processual rationality' of RA created by phylogenically modified structures and processes connected with the information gathering, processing, storing, and utilising activities. They all are useful in increasing the possibilities of the survival and welfare of individuals and species:

- The human central and peripheral nervous systems enable the emergent creation of RA's mentally experienced steering operations, which can vary from unconditioned reflexes to refined conscious planning and decision-making procedures using the latest computer assisted systems. These mental control operations of individual's actions and reactions aim at accommodating oneself into the mental and the material environment in which one is living.

- The processual formation of memory representations and their sensory and structural attributes as elements into the memory representations of singular particulars (Lambert & Shanks 1997) see Chapter 3.

- The rationality of classes, categories, stereotypes, and concepts is in their ability to lessen the mental burden of swapping between the long-term memories and working memory when aiming at recognising of the encountered entities, see Chapter 4.

- The multi-purpose use of individual's memory representations of entities of the being enables the situation relevant action and reactions.

- RA’s attention process selects those objects of observation and apprehension, which serve our goal-oriented actions or are changes of importance in our environment.

- The dorsal and ventral streams in processing the visual information enabling the utilisation of the collected experiences in interpreting the visual sensations and forming the visual perception. The analogical double processing is assumed to happen on all sensory areas.

- The processes of our mirror neurons enabling the learning linguistic expressions and other motor actions just by aping.

The combination of the sensation and perception processes into one two-phase system of perceiving, in which the concept based explanations of the different meanings of the objects attended are brought into the conscious phase of reviewing and comprehension. According to the RA-model this happens in most cases automatically by using sensations or the mental primitives as a search attribute for recalling the situation relevant memory representations to explain the meanings connected with it. This evidently is a process, which is needed to enable man to utilise his experiences collected during one's ontogenic history. What is more rational than learning by experiencing, aping, and living through - feeling, reacting, thinking, planning, deciding, acting - different situations and then using the experienced again in similar or analogous situations.

2.5.4.2 Some Ontogenic Features of RA's Rationality

The rational features in man's bodily and nervous structures are thus products of the phylogenic history of our species, but some of the rational features of individuals' behaviour and actions are results of their ontogenic histories. Features of the conscious ontogenic rationality built on the processual phylogenic basis of RA can be seen for instance in:

- Man's **long-term memory system**, which forms the phylogenic basis for most of the rational features of man. The long-term memory systems, both declarative and nondeclarative or explicit and tacit, empower the possibility of utilising individual's experiences collected during one's ontogenic history. This enables individuals to build their personal features with its basic values, norms, and principles. These features form the structures of his moral and ethical backbone and his possibilities for independent use of intellect for contemplating and reasoning in ones thinking and decision making. According to Aristotle, thinking is the highest form of action, which resembles the Gods' way of being.

- Man's **working memory** that is limited in capacity but quick in its ability to retrieve memory descriptions from subject's long-term memory. It enables man to concept based or conscious reviewing of the situation relevant entities and their values and meanings

- One of the basic rational features of RA, that may be mentioned here, is the fact that man seems always to be **striving to find invariances** from the multitude of phenomena in one's environment, (Kaila 1939 p 14). This is done as well by laymen as by the members of the business and scientific communities. The latter are doing it more systematically and by applying methodologies included in the paradigms of the business or scientific communities of which they are members.

- Striving to find invariances can be seen also in layman's instinctive search for rules of thumb enabling one to forecast the future. Working rules enable also the systematic formations of different possible options before making decisions. Thus, the rules can be seen as tools, which are developed during individual's ontogenic history that are advancing one's well being and the possibilities to survive as an individual and species. Striving toward invariant rules means also the advancing of the control of the relations between oneself and the changing environment.

- The **conscious and situation relevant control** of one's actions and reactions, interactions and exchanges, thoughts, and imagining aiming at achieving the valued goal states of affairs.

- The **situation relevant control** of one's environment and the events and changes to provide oneself with a proper set of opportunities for goal-oriented actions.

Examples of man's rationality in modern organisations are the planning and decision making systems. They are often supported by the information or knowledge warehousing systems. This **rationality** is aiming at the optimum use of material, monetary, intellectual, social, and other types of material and mental capitals. Man is here seen as an actor, as a rational and social planner and decision maker; he is trying to maximise the use of possibilities found in the situations lived through and minimise the threats and negative consequences. On the floor level practice man's conscious efforts toward rationality is seen in the systematicly planned development work of products, organisations, communications, decision making, production flows and processes, tools and methods, instructions and procedures, etc.

2.5.5 RA's Agency as a Central Element of his Substance

The above brief analysis of the three dimensions of RA's actions show clearly that man's phylogenically based and ontogenically accomplished peripheral and central nervous systems form the grounds for our mental substance. This is performed by our brain's ability to offer the systems of our long-term memory and working memory as mental tools and space for the mental steering of our actions. Seeing RA as an **actor** reveals the basic substance of man. This substantial feature of man can be explicated in one Finnish word 'toimijuus' which perhaps can be translated into English by the term agency. **Agency** is here used as a term referring to the descriptions of man's substance, structure, and functions as an actor or a rational actor. Actors' well being and survival depends on their ability to goal oriented, planned, and also - often enough - effective and results yielding actions in varying situations.

I have illustrated the main dimensions of man's substance as an agency in figures 2.1 and 2.2. I have completed the picture in the summary with the ontology of RA's world in figure 2.3. It presents the material and mental features of man and their internal connections. The mental of man is an emergent creation of man's central and peripheral nervous systems. The mental has the steering power to the manifesting features of man's speech and other motor actions. In this study, I will be concentrating to the basic structures and functions of man's mental steering system. Man's ability to control his existence and interactions by applying rational planning

and decision-making has been and will be one of the necessary conditions for man's survival as a species. These rational features of man are often seen as matters of course, but they can also been seen as results of our processual and only partly conscious steering system directing our efforts toward the goals we see valuable.

2.6 RA's Interfacing Neck with its Emergent and Steering Effects

The two-channel linking 'neck' with its emergent and steering effects is functioning between RA's mental head and his central nervous system. It consists of the two transforming processes performed by our brains. These ontological transformations are assumed to be products of our peripheral and central nervous systems especially the neurone nets and their system effects in RA's brain:

- The first transformation is the **emergent effect**, in which the sense-based and encoded information is conversed into our experiences.

- The other transformation or the **steering effect** is assumed to convert our mentally experienced - for example, the accomplished plans and decisions - into a proper flow of efferent action potentials, which are then steering the executions of our situation relevant speech and other motor actions.

Thus, these two postulated 'effects' are assumed to form the two necessary interfaces between man's mental and his material body and environment. The pulses and flows of afferent and efferent action potentials can be measured and the manifesting features of these effects can be observed and tested, but the human sciences do not have a detailed explanation of how these two transformation processes are produced in our brains' networks and their systems. Thus the genesis of the mental of man is still a somewhat unexplained phenomenon. Hopefully, the beginning new century of the brain research will little by little open the veils hiding the truth-like explanations of the functions of our brains. Till then, we have to build and use different types of metaphors to make these processes more understandable.

2.7 RA's Mental Head forming the steering system of man

RA's mental 'head' - on the top of figure 2.1 - is a sketch of RA's steering system with its views and SCES. With its frames of RA's world-view, role-view, resource-view, situation- and action-view it is modelling the human mind or psyche as explained in the beginning of this Chapter. RA's views are used in our everyday language and experiences. We all orient to our environment by applying our World-views, which describe the entities, as they are perceived and also how they ought to be according our values and norms. Analogically we are using our role-, resource-, and situation-and actions views.

The more detailed descriptions of RA's views are in section 4.1 in Chapter 4. The 'head' is the material or brain-bound mental space for our memory representations of the entities of the being and for the mental actions and experiencings, with which are steering our manifesting actions and behaviour.

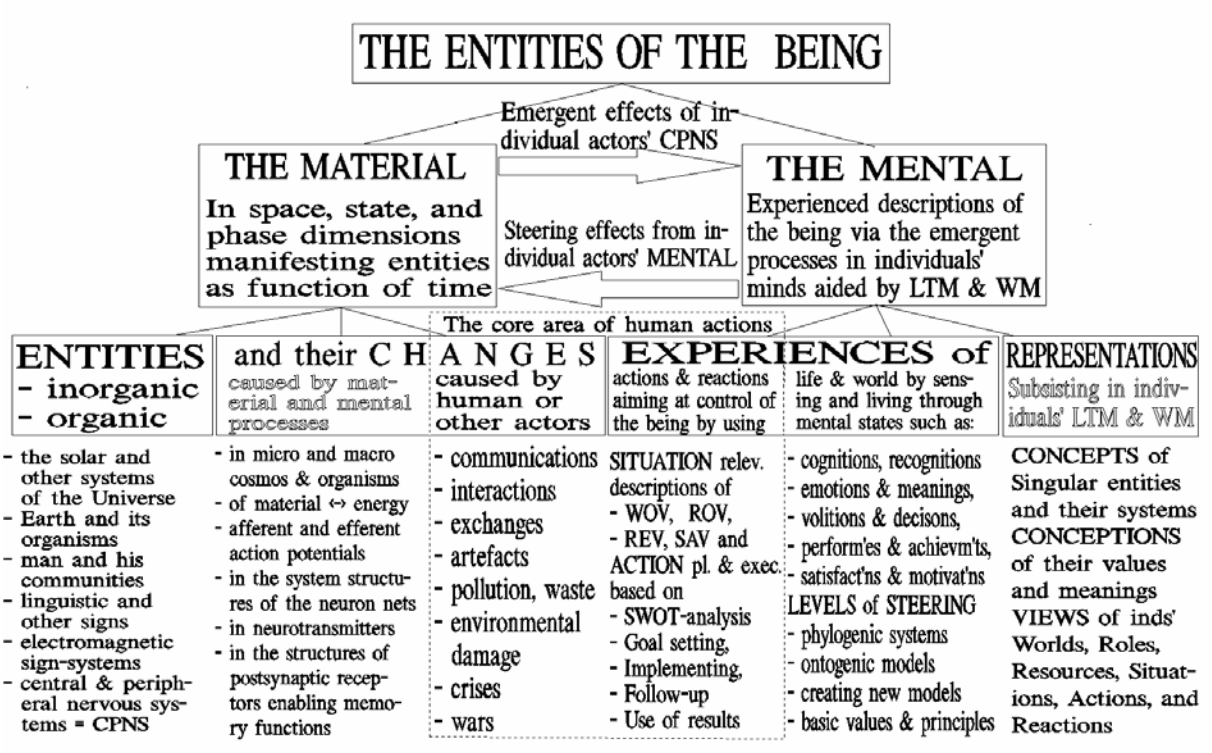


Figure 2.3 An Ontological Analysis of the Being

At the same time, the 'head' is the mental space for the processes of living through different qualities, levels, intensities, and durations of our experiences on **the scene of experiencing and steering** or SCES. RA's SCES is the centre of RA's planning and control system finding its mental space in our working memory, as has been mentioned earlier and as will be explained later in Chapter 4.

2.8 Summing up The Basic Facts and Beliefs of Man

In what follows, is a short list of the main facts, beliefs, presuppositions, and ideas on which the RA-model will be built:

1. The **being** is all there are in our Universe. It is formed of material and mental entities; see Figure 2.3 in the previous page. The material exist and manifest in space, state, and phase dimensions as functions of time. There are material entities - like the gravitons - for which the physicists don't have equipment to observe them. The mental entities only subsist as individuals' experiences, which can have and often have varying degrees of intersubjectivity between members of the same cultural groups.

2. Man is assumed to be a mentally directed and controlled, and then, a rational, social, and biological **actor** created by the processes of the physical, chemical, biological, social, and cultural **evolutions**.

3. Humans as **individuals** are dynamic products of their phylogenic and ontogenic histories. They build and process the basic features of their material and mental resources, abilities, and roles in their communities. Individuals can change and expand them by utilising their creative powers in thinking, planning, and acting while adapting to their cultural environments.

4. The biological evolution has furnished our brains with an **emergent** process in which the sense-encoded afferent action potentials - our only channel to our physical environment - are transformed into experienceable descriptions of the sensed and observed entities and their different features. Our brains can also store the experienced as memory representations of the entities and often also the different elements of the situations in which they were observed.

5. These **situation-views** are seen as dynamic collections of elements of the **memory representations** of what happened. Their elements are formed of actors and their roles and doings and other ingredients, which participate in them. The concatenated situation-views form stories, which bind them into memorable sets of episodes, which are stored in our **long-term memories**.

6. This processing takes place during and even after individuals' actions, interactions, and exchanges with their environments by forming and manipulating the situation relevant memory representation in their **working memory.** During the REM-phases of our dreams we possibly reorganise the sets of our memory representations into a more controllable order. Man's evolutionary history has formed also the systems of the neuronal nets in our brains for the structures and functions of our **working memory** in which we can consciously manipulate a limited set of simultaneously recalled memory representations of the entities of the being. Although the simultaneity of conscious content of our working memory is limited the speed of changing it is really fast, which offers tools for increasing the creativity and efficiency of our thinking and planning processes.

7. Human brains seem to have also **another problematic transformational** ability to produce a situation relevant flow of efferent action potentials to control of our speech and other motor actions according to our thoughts, plans, and decisions. I have named this transformation the **steering effect**, for its ability to direct and control our speech and other motor performances.

8. Sciences do not have any good explanation how these two transformations - from material into mental and vice versa - take place in our central nervous systems; the results of them we all can live through in all of our everyday activities. Some timing and location features of these processes can be measured by different brain imaging tools like PET, MEG, MRI, fMRI, etc. But they do not tell how the substance of the transformations happens.

9. Nevertheless, the brain researchers have shown that the **dorsal and ventral streams** of the processing of the encoded visual information exemplify the way our on-line and memory-line connections are built in our central nervous system. We need the on-line connection to our environment to control our actions and we need the memory-line connections to understand the situation relevant meanings of the observed. The meanings of the seen and observed form the basis for the rational planning and execution of our actions in the situations we are living through.

10. Man's ability to **situation relevant**, rational, and **goal-oriented actions** and interactions has been and will be a necessary condition for his survival and well being. This ability depends on the situation relevancy of our brain's transforming functions connected with the encoded information and the decisions we make.

11. Rizzolatti and Arbib (1998) have found that apes' motor 'command' neurons in the ventral premotor area of the frontal lobes - so called **mirror neurons** - activate not only when apes are doing some operation but also when seeing other apes or the researcher to do the same operation. If the human **mirror neurons** function in the same way, they will play a central role in explaining the processes of the human learning. This means that they could explain how our brains function when they 'learn' to produce the efferent action potentials to control our speech and other motor actions (Rizzolatti and Arbib 1998)

12. According Rizzolatti and Arbib 1998, Ramachandran 2001, Motluk 2001 our **linguistic abilities** can be explained by the mirror neurons because their functions seem to give a natural explanation of our ability to imitate the seen and the heard, see Chapter 3.

Thus, the results of brain research and neuropsychology seem to open slightly the secrecies of the two transformations between the material and mental and vice versa. The dorsal and ventral streams of visual information and the newly found functions of the mirror neurons may in the future explain how our learning processes are handled in our brain-system. The seen and heard prepares - besides the activization of the sensory areas of our brain - also the relevant motor neurons to control the movements and actions just seen or the speech acts just heard. Parts of the mysteries in our linguistic abilities seem to get a natural explanation through the functions of our mirror neurons. They open also a bit the secrecy of our brain's ability to produce the flows of efferent action potentials controlling our speech and other motor actions. 'Learning by aping' seems to be main strategy of evolution.

2.9 The Hypotheses of this study

The four intuitive and hypothetical definitions, which I presented in Chapter 1 as initiators of this study, contain statements about a set of theoretical terms and preliminary descriptions of their assumed referents. **Action** was seen as "an agent's steered use of resources, which are under his control and with which he is aiming at a valued goal state of affairs". **Knowledge** was seen as concept- and/or sign-based documentation of an entity of the being. **Motivation** was seen as an object oriented mental energy. **Values, norms,** and **language** were seen as the mental dimensions of an **organizational culture**. These mental entities were assumed to be in

central role in individuals' mental operations aiming at rational goal setting and control of planning, deciding, implementing, and communicating actions.

The common content and substantial feature in these terms is that they all refer to theoretical entities, which - according to my monistic but two-dimensional ontological position - are mentally subsisting entities. They all play a central role in the steering and directing processes of man's actions and behaviour. The main ideas in the original questions of this study were: What are the mental meta-elements and structures, which are behind our mental states of cognition, emotion, volition, motivation, etc. and which have an effect on the planning and controlling processes and operations of individuals' actions and behaviour?

The human pursuit of knowledge has advanced from different types of magical, religious, philosophical, and psychological, explanations of the sensed information of the objects of attention towards systematic theory building of different sciences. In the evolutionary processes man's ability to forecast the future increased his possibilities to survive. This in turn has depended on man's ability to find invariable features, regularities and rules, along which the entities in his environment acted and behaved. Thus the memory representations had to include kind of a time-line of entities to make this forecasting possible.

As mentioned earlier, sciences can not yet exactly explain how the phenomenal world is created from the material and vice-versa; the two ontological transformations hold their unexplained features of being able to mediate or interface between the material and mental states in man's and other actor's central nervous system. However, the testable memory representations - in our long-term memory - and their system structures with their sense-based and structural attributes can be used to describe and explain many features of the mental dimensions of man.

Building on the above condensations of some truthlike beliefs concerning man's substance and actions and their multidimensional features I am stating as the **working hypotheses** of this study that human beings, are rational actors, RAs, and:

1. A scientific explanation of the human mental can be built on rational interpretations of the results of the modern memory research as assumed in Chapter 2.

2. **RA's concepts** are **situation relevant sets** of the sense-based and structural attributes of our memory representations of the attended entities. Their totalities and components are stored in our long-term memory from where they can be recalled to our working memory

and used as mental tools for conscious mental operations. The system model of human memory representations and concepts is presented in Chapter 3.

3. **RA's steering system** or his planning and control system with its memory-based **frames** and **the scene of experiencing and steering** or **SCES** form the structures of human **mind**. These systems have their store in our long-term memory and their conscious **mental space** in our working memory, where we can live through different qualities, levels, intensities, and durations of our mental states. The postulation of the system model of human mind is presented in Chapter 4.

In Chapters 5, 6, and 7 I shall explain how some of the psychological and philosophical theories and the controlling elements of the human action can be seen from a new point of view. These views explain at the same time how the postulated entities can be used to solve the problems and answer the questions I set for this study in Chapter 1. The structures and functions of the hypothetical entities of RA's concepts and his mind offer these new points of view. Remembering the wisdom of Occam's razor, I try to manage with these two theoretical entities and their system structures and functions when attempting to deepen the contemporary understanding the real substance of human mental dimensions and their role in our knowledge, values, motivation, language, and actions. The postulated structures and functions of concepts and mind reveal to a certain extent also the role of the mental in the steering and controlling processes of human actions in organisational and other environments.

Motto of Chapter three:

If we realize what the human concepts are, we could possibly comprehend what the human knowledge, values, motivation, thinking, and consciousness are.

3. CONCEPTS AS ATOMS AND MOLECULES OF RA'S MENTAL

3.1 The Etymology of the Term Concept and some Features of its Use

3.1.1 Concepts and the Etymology of the Related Terms.

According to my ontological position and my hypotheses concepts are mental entities and situation relevantly recalled sets of our memory representations of the entities of the being. Before going into the detailed postulation of the types and structures of RA's memory representations and concepts, I shall search for the basic substance and functions of concepts from the etymology of some terms connected with it. The structures and functions of theoretical entities can possibly be conceived by examining the etymological backgrounds of the terms, which are referring to them. The etymology of a term often reveals the concrete - though often just metaphorical - features of the original referent of the term. This can then help us to understand the nature of its present referential and perhaps also its other meanings.

I shall begin to delineate the 'time line' of concept by studying the etymologies of the English term 'concept' and its Finnish translation 'käsite'. Concept refers to the theoretical entity, which is of central importance in understanding the structure and functions of the mental dimension of human beings. The Finnish word 'käsite' is a term, which is easily derived from the word 'käsi' = 'hand' and 'käsittää' = 'understand' or 'comprehend'. Thus, the term concept in Finnish has the word hand in its etymology. It is easy to conceive 'käsitteet' (concepts) as mental tools for getting the object items in the hold of one's 'hands'. A better expression might be to say that you get an object in your 'mental hands' and 'mental control', if you have a concept of it or a many-sided conception of it. When an object is in your biological hands, you get lots of sensory or 'concrete' information about its different features, as will be discussed later.

When having the object in your 'mental hands' you can 'see, touch, and feel' the object in its totality, its structure and functions, and understand its different meanings for you. This happens if you have a proper collection of sensory and other descriptions in your long-term

memory of the object in question. By recalling the memory representations of the object you are able to interpret the sense based information you are getting of its present state and bring to your mind its history, and speculating its possible future states. These all are areas of descriptions we usually remember about important objects or singular particulars in our environment.

The English nouns concept, conception, and comprehension and the verbs to conceive and comprehend have also concrete backgrounds in their Latin etymology. The backgrounds are found in the Latin verbs concipere = to take in or receive, and capere = to grasp, to take, (Niiniluoto 1988). These pragmatic connective metaphors are analogical with that of the Finnish term 'käsite' and 'käsi' above. Even the German term Begriff has greifen = grasp in its etymology. All these suggest that through concepts one can get the representations of the objects into one's mind or into one's mental grasping, viewing, and observation. During this mental viewing, its different meanings are interpreted by the different features of the object of attention.

Another Finnish word 'käsitys' = 'conception' can be derived also from the word 'käsi' = 'hand' and the verb 'käsittää' = 'understand'. One day, the managing director of an exporting company asks the marketing manager what is his conception (käsitys) of Matti and his possibilities to take the open position of the export chef in a certain new foreign market area. The term conception refers here to a whole set of descriptions of Matti's education, experiences, linguistic abilities, knowledge of the culture of the planned countries, his ethical and moral standard, his ability to control his behaviour under impact of wine and booze, etc. Conception in everyday language refers thus to many-sided, even value based and moral descriptions of the attended object or person.

The English verb comprehend is derived from the Latin verb comprehendere. It is equivalent to com = together + prehendere = grasp. Again, this term refers to the process of getting the object into one's mental grip or control by having mental 'hands' to grasp the object so that one can mentally handle and control it. Thus, grasping seems to be an important metaphor in describing the meaning also of this word. It is describing a mental event in which one is getting mental hold of the object of attention.

The Finnish verb 'ymmärtää' = to understand or comprehend in English, has 'ympyrä' = a circle, in its etymology. 'Ymmärtää' can be seen as a verb describing understanding or comprehending by referring to a concrete situation where you can go around an object or

touch it with hands to see and feel it from different sides and that way get a good touch, contact, vision, familiarity, and thus also a good conception of it. This describes quite well the way our concepts - with their name and other sensory attributes - are formed or processed as by-products of the contacts, interactions, and exchanges with the object entities. It describes also the way how concepts serve human beings in their strive to get control of their environments and their changes as will be discussed later in this chapter. In addition, also the English saying – 'I cannot get my head around it' - refers to the mental going around the object. According to Piaget and Vygotsky our concepts of entities - though they seem to have seen concepts as a set of classifying attributes - are formed during our interactions and exchanges with them, see section 3.1.5.

One can ask whether going around a thing - or standing under it – gives a better hold or conception of it. By 'standing under' an entity you could possibly see its roots and grounds and thus comprehend better its 'genesis and history'. Studying the etymology of words is equivalent of going to the genesis of words referential meanings. This can form in many cases a concrete though metaphorical ground for the understanding of the meanings of them. The etymological approach in conceptual analysis seems anyway to help in catching the original pragmatic meanings of theoretical terms and through them a better understanding of the modern referential and other meanings of them.

3.1.2 Concepts as Meanings of Terms in Philosophy

Concepts have been a common issue in philosophy, psychology, linguistics, semiotics, and artificial intelligence. In the classical semiotic triangle, concepts are seen as the meanings of terms, which have some objects as their referents. Sentences are formed of terms and functors by following the grammatical rules of the used language. While concepts are meanings of terms, the meanings of sentences are seen as propositions, (Niiniluoto 1980).

Sir Quinton (1990 p. 159) maintains that: "…possessing a concept means the ability to recognise instances of the concept in question. It means also the ability to draw inferences from sentences in which words referring to the corresponding concepts occur. The analysis of concepts could possibly be seen as the chief or even the whole 'businesses' of philosophy".

In Tractatus Logico-Philosophicus, Wittgenstein argued that the world is ultimately composed of simple facts. The purpose of language is to illustrate these facts and the only meaningful and scientific propositions are those, which do it. According to Russell, complex propositions can be resolved into their simplest components, which he called atomic propositions. These

propositions refer to atomic facts, the ultimate constituents of the universe. All meaningful propositions must correspond to facts. This idea Russell called logical atomism.

For G. E. Moore philosophy was primarily analysis. Philosophical task involves clarifying puzzling propositions or concepts by indicating less puzzling propositions or concepts to which the originals are held to be logically equivalent. Once this task has been completed, the truth or falsity of problematic philosophical assertions can be determined more adequately.

Morris Weitz (1988) examined in his history of concepts how the major philosophers from Plato to G.E. Moore, Ryle, and Geach used concepts. According to Morris Weitz the history of the theories of concepts in philosophy is necessary because: '...the philosopher's theory of concepts is not simply incidental to his work but fundamental in his philosophy in that it determines the overall condition or criterion of what he takes to be the correct statements and solutions of his problems...' (Weitz 1988, xv).

The same could possibly be said about all researchers, scientists, and laymen because - if we see concepts as the tools of thinking and other mental operations - their concepts determine the ways they are thinking and solving their problems even they never have explicated their conception or their theory of concepts. Weitz sees concepts as man's dispositions to use words and language correctly. Palomäki (1994) follows Weitz's ideas of concepts' dispositional nature and their definitionally closed structure. He sees in the theory of concepts analogical features with the theory of sets. In this study, I am assuming that human concepts are our mental tools enabled by our memory representations. They are related to sets of our memory representations of singular particulars and their systems, which can be either material or mental entities. We can meaningfully discuss about the values and motivations of a certain person or about the features of the culture of a certain country or organisation. To be more precise, concepts will be assumed to be sets of the recalled and situation relevant attributes of the memory representations of the entities of our attention. This basic substance of concept and its psychological structure and functions can possibly explain also the dispositional features of concepts to which Weitz is referring.

3.1.3 Some Comments of Concepts in linguistics

According to Ferdinant de Saussure (1857 - 1913) concepts are: '...facts of consciousness associated with linguistic signs or sound pattern by means of which they may be expressed…'

(Saussure 1916/1990, pp. 11 - 12). Saussure was the European structuralist who made the distinction between 'langue' and 'parole'. Langue refers to subject's mental competence of language (grammar, lexicon, and semantics) and parole to the practical manifestations of speech acts.

Noam Chomsky (1928-) has claimed that human linguistic ability goes beyond the structures of languages. His universal generative grammar or the theory of the human linguistic competence refers to man's mental ability to produce and understand sentences and it will not be explained by just analysing the structures of words and sentences. One can, of course, doubt if our genes can mediate the thousands of different types of grammars in the languages of our Globe. It is much easier to see our linguistic abilities as functions of our interactions with the communities in which we have acted during our ontogenic histories.

Jackendoff (1996, 2002), in his theory of conceptual semantics, gives concepts the role of: '...a mental representation that can serve as the meaning of a linguistic expression…' (Jaccendoff 1983. 11). Jaccendoff's idea is analogical with the idea in the classical semiotic triangel aiming at the referential and mental meanings of terms (Niiniluoto 1980, 118).

Forrester (1996) in his book Psychology of Language refers to conceptual structures when explaining the meanings of words and sentences of language but does not go into details of these structures.

Paivio does not use the term concept in his Psychology of Language (1981) but in his theory of dual coding he refers to the image- and verbal-systems, which he uses to explain the human linguistic behaviour (Paivio 1981, 67-74). His image system: '…combines visual, auditory, kinestetic, and other sensory components of nonverbal information into integrated wholes'. Thus the representational unit contains information from the various sensory modalities about objects and events. Paivio's verbal system is dealing with linguistic information of the entities in our long-term memory.

Karlsson (1994, 29, 184) sees concepts as mental representations from the point of view of the emergent materialism. According to this view, the mental can be accepted as a feature of human substance emerging from the growing complexity of our central nervous system created by the phylogenic evolution of our biological and material structure. Referring to Poppers ontology of the three worlds, Karlsson sees language as a linking interface between man's mental world M2 and his cultural, scientific, and artistic products, which exist in Popper's world M3.

3.1.4 Concepts as categories and classes in psychology

Concepts in cognitive psychology are seen as memory representations of classes or categories of entities. This has been the common way to interpret the meaning as the referent of the term concept since Vygotski (1931>1982), and Piaget (1936>1983). According to Piaget cognitive development occurs in four stages from sensor-motor intelligence to preoperational thought, concrete operational thought, and formal operational thought at age of 12. The approximate borderlines between the stages are at 2, 7, and 12 years of age. First at the fourth stage, children were able to develop hypotheses and deduce new concepts in their thinking operations.

The mental representations of categories are typically formed of a number of shared features, attributes, or components, (Rosch 1983, Gleitman & all. 1983, Saariluoma 1992, Smith et al. 1997). Categories can form hierarchies; a terrier is a dog, is a mammal, is an animal (Murphy & Lasalin 1997, 94). Categories are often also formed on the basis of similarities manifesting as prototypes or exemplars of similar entities, (Hahn & Charter 1997).

Categories can be seen also in the Aristotelian way as any of the fundamental modes of existence, such as substance, quantity, quality, relation, place, time, position, action, and affection. Kant had in his philosophy four groups of a priori concepts, which he called categories. In his quantity group are unity, plurality, and totality; the quality group consists of reality, negation, and limitation; the relation group is formed of substance-and-accident, cause-and-effect, and reciprocity; and in the modality group are possibility, existence, and necessity. According to Kant, categories and intuitions can be used to interpret experiences and perceptions. As will be explained later, concepts' main functions in the RA-model are just built on their ability to situation relevant interpretation of the sensed and its different meanings. This often happens by using the classifying attribute as the first and quick interpretation of the meaning of the sensed object. The Aristotelian and Kantian categories could possibly be seen also as classes of classes. There are plenty of instantiations of classes in any of the above categories.

Anderson (1995 352 -366) sees concepts as categories, which can have many features. Baddeley (1997, 229-255), when discussing about semantic memory, sees concepts also as sets of descriptions forming the features characteristic or prototypical for a class or a category. However, he refers to concept types such as Bartlett's (1932/1954) concept of schema, Schank’s (1975) concept of scripts, and Minsky's (1975) schema-like concept of frame.

Baddeley sees scripts and frames as examples of modern schema theories. Bartlett assumed that schemas are the means of remembering and learning new material. For Schanks scripts represent commonly experienced social situations and events enabling subject to behave appropriately. Minsky maintains that frames are '...structures we have acquired in the course of previous experiences.' We all remember millions of frames, each representing some stereotyped situation such as meeting a certain kind of person, being in a certain kind of room, or attending a certain kind of party....', (Minsky 1988, 244).

Schank and Abelson (1977) have suggested scripts, with their elements like scenes, plans, MOPs or memory organisation packets, and TOPs or thematic organisation points as memory representations of social events. A typical case is formed by the totality and the phases of a restaurant visit. From our everyday experience, we all know how lively our scripts are storing the events and happenings. It can be heard even in children's discussions about their experiences. They are full of detailed descriptions of what happened and what people said and how they behaved. Evidently, scripts are our ways to store the events in our personal history with the situation relevant linguistic expressions connected with them. As will be explained later, sentences and other linguistic expressions are stored as situation relevant sensory attributes in RA's views describing events, happenings, participants, their roles etc. (see section 3.6.2 and Chapter 4

3.1.5 Some Basic Functions of Concepts

In the RA-model concepts and memory representations form the central elements of human mental. Concepts are assumed to be sets of the recalled elements or attributes of the memory representation of the object of attention. These sets ought then be situation relevant and thus explain the meanings of the sensed and attended parts of subject's environment. Using the cues derived from the concept's etymology and the ideas of concepts in de Saussure and Jaccendoff had in their definitions, we can infer that one of the basic functions of concepts is to make the sensed understood. This means that the sensed is connected with the remembered descriptions of the object entity of the being. From the evolutionary point of view, concepts should enable subjects to utilise their earlier experiences when interpreting the meanings of the sensed. This would mean among other things the ability to fast classify the object of attention as an opportunity or threat, friend or enemy, prey or preyer, edible or inedible, etc.

As mentioned in Chapter 2, the dorsal- and ventral streams of visual information processing in our brain system are an example of these two-phase processes.

Besides the above interpreting functions our concepts have the storing functions of those repeating features of entities or individual objects, events, situations, habits, ways and methods to act in certain situations, etc. Experts like medical doctors, lawyers, and consultants are examples of professionals who store ready-to-use models and their modifications for often repeating cases and situations. These models consist often rules of a proper set of medicine and behaviour to treat the illness or remedy the problems of an organisation. Better part of experts' specialty consists of the different forms of explisit and implicit knowledge, which are systematicly stored for future use.

In our everyday activities, models are used though the degree of systemacticness is less developed. The models are often situation-oriented and recalled when certain performing skills are needed. Skills are not concepts but they are comprised of 'stores' of analogical sets of efferent action potentials to steer the needed and situation relevant sets of speech or other motor action. These 'stores' are end-results of a great number of exercises and corrective repetitions using the audible and muscular feedback links in our peripheral and central nervous system. These stores of skills are sometimes called tacit knowledge. Children's linguistic abilities and their amazingly fast development are possibly based on their ability to 'ape' the heard words and situation relevant sentences and other expressions and correct their own expressions and pronunciation through this feedback system (Karlsson 1994, Korhonen 1994, Forrester 1996). The ‘mirror neurons’ may in future explain this human ability to learn by ‘aping’ the seen or heard (Rizzolatti and Arbib 1998, Ramachandran 2001, Motluk 2001).

The third group of the functions of our concepts and memory representations are formed by their use as mental tools for thinking, planning, imagining, creative problem solving, decision-making, communicative actions, etc.

According to the facts, basic beliefs and the ontology of the RA-model presented in Chapter 2, the common feature of all the functions of concepts is to act as an interface between the outer material and the inner mental systems of human beings. Man's mental life is totally depending on the interpreting power of his memory representations, as is seen in the system model of Man depicted in Figure 2.1. On the bases of neuropsychological facts and the etymology of the term, a preliminary list of the necessary functions of human concepts is as follows:

1. Concepts act as interpreting tools connecting our on-line sensory information of our actual environment with our earlier experiences created during our ontogenic histories. The dorsal and ventral streams when our brains are processing the visual information - in chapter 2 - exemplify the material indications of the brain-level reality of these mental explanations (Kolb & Whishaw 1996).

2. As explained in Chapter 2 this interpreting means in fact that there always is a double-phase process functioning in the way that:

    - The mental primitives or our continuous flow of sensations is formed of the flow of afferent action potentials encoded by our senses and then

    - Our sensations are given concept-based and conscious explanations, through which we usually experience the sensed as perceptions of the known and understood objects of attention.

3. The phylogenically steered and emergent processes of these experiences form the foundations for a rational and situation oriented perception and understanding by utilising the memory representations stored in subject's long-term memory. The degree and deepness of understanding depends on the situation relevancy of the recalled memory representations in subject's working memory.

4. Concepts enable man's cognitive, emotional, volitive, and motivational mental states, in which the attended object entities are named and their meanings are explained and understood based on the situation relevant interpretations based on the subject's earlier experiences stored in his memory representations and concepts. This means in fact that our concepts:

5. Concepts provide the subject with the descriptions of the value and meaning attributes connected with the attended object entity.

6. As will be explained later in this chapter, in everyday life we often connect the value and meaning descriptions with the resource features of the object. The resource features are seen from the point of view of our actual or potential actions now or in the future. This is made possible by the value- and time-lines in our concepts leading to the value- and time orientations of actors, which will be explained later in this chapter.

7. Concepts provide man with the ability to name and describe entities by the processually and/or consciously formed name and other linguistic attributes. These attributes are assumed to function as one set of the search attributes in subjects' concepts and thus forming the basis of the human symbol function and thus also the basis of our linguistic abilities.

8. Concepts provide man also with the abilities of communicative actions by enabling the processual and even conscious forming and storing the intersubjetive names and linguistic expressions as elements of our subjective concepts, views, and conceptions of the entities of the being and their systems.

9. Concepts provide man with the mental tools, which are needed in the rational cognitive activities of thinking, imagining, planning, and decision-making, by proper set of descriptions of entities of the being.

10. Concepts provide man with an ability of grouping entities into classes, types, or stereotypes, which enables the rational mental handling of the attended and sensed world. This is assumed to happen by the processual forming of the classifying attributes to our concepts. They form often the only descriptions, which are needed to deal with the observed entity.

As mentioned earlier, our conscious and even unconscious mental is based on the recalled and active elements of our memory representations. The above list describes only some of the vast number of functions of our concepts. These functions of concepts are taken here as the base on which a preliminary draft of the structure of concepts can be shaped. What are the plausible structures and functions of our concepts and brain-processes, which enable all the phenomenal we experience? The hypothetical answer to this question will be sketched in the following sections and in Chapter 4. Concepts will be seen as the recalled collections of situation relevant attributes of subject's memory representations of singular particulars and their systems, classes, relations, interactions, etc.

In Kant's Copernican Revolution human knowledge was not about the outer entities but was created in man's mind and 'Das Ding an sich' in the outer world was seen as totally inaccessible for man. In the RA-model the outer world is assumed to be accessible through the on-line sensory information and its interpretations as sensations. Thus Kant was right in a way; we need our brain's emergent transformations to form sensations from the encoded afferent action potentials and a second part of the interpretation to form an understood

perception of the object of attention. In these transformations RA's concepts play a central role.

Classes in the RA-model are not concepts. They are seen just as a set of attributes describing the common features of a group of entities having certain degree of similarities in their sensory or other properties. I chose this strategy because we do not interact and have exchanges with classes but with individual particulars, which, of course, carry with them the features of belonging to one or more classes. In the RA-model of concepts, classes and categories are groups of the sensory and/or structural attributes describing the common features of certain types or groups of entities.

This approach means a kind of a 'Copernican revolution' in the theory of concepts. The class is taken from its central position in our conception of concept and put aside just as a group of classifying attributes in the total structure of concepts. The name of the entity or the linguistic expression, which is used to describe the object or situation under our attention process, is now given the central position in concepts. This is motivated for the factual status of the linguistic expressions in our concepts, which is formed with their role as the main search-attribute in the human communicative interactions recalling the other situation relevant attributes to explain the meanings of the objects of attention.

We are interacting and having exchanges with particulars and individuals, not with classes and universals. Usually, we also want to be treated as individuals and not just as representative of a class or as a stereotype. However, it is useful and rational to know to which class or category the object of our attention belongs, because it simplifies the mental operations, which are needed in the situation. A car or a man on a city street does not need many detailed attributes to be confronted and understood. Our friends' cars instead have many important features about which we can sometimes discuss with them as well as about the weather, which can have innumerable features from wonderful to harmful and awful.

3.2 The Situation Relevancy of RA's Concepts and their Attributes

3.2.1 Conquering the Mental with the Weapons of the Natural Sciences

In physics, the understanding and explaining of the world is thought to be found through analysis. Since Democritus, (ca. 460 - 370 B.C.) the human thinking has strived towards the

undividable elements or atoms of the material world. To day, atoms - like H, O, N, C, etc. – have asserted to have internal core structures of protons and neutrons, electrons, and hundreds of other elementary particles. Protons and neutrons in turn are formed of the quarks, which are bound together by the strong nuclear power mediated by gluons. Atoms are surrounded by electrons, which enable the formations of molecules when aided by electromagnetic powers mediated by photons. These are the main structures and powers, which regulate the connections and interactions between atoms when forming molecules like H_2O, CO_2, DNA, RNA, etc.

Protons and neutrons are built of the six types of quarks. There are speculations that even quarks may be built of still smaller elements, though the standard theory does not need them. Quarks are assumed to form the main elements of protons and neutrons forming the material world manifesting to the human observer in space, phase, and state dimensions as functions of the actual collection of present forces and time as mentioned earlier. The empirical proofs of the postulated elements of the material and the forces steering their interactions has enabled the rational and understandable descriptions, explanations, and predictions of the behaviour of material entities and their systems. Based on this analytical and empirical approach in natural sciences and technology our nuclear power plants and nuclear bombs are built, the Moon visited, and the conquering of the planet Mars has began. Nevertheless, the physicists are aiming at a unified field theory, which could explain all the material interactions and all the four forces from strong and weak nuclear forces to electromagnetic and gravitational forces, which are now in use.

Now, it might be the proper time to begin to discuss about the empirically testable elements and powers of the mental of man. Their internal structures and their interactional energy- and power-relations may play a central role in our experienced or phenomenal world. According to the basic neuropsychological facts in Chapter 2, the material base of our mental is in structures and functions of our peripheral and central nervous systems. As explained in Chapter 2, I am assuming that the mental is never manifested without its neurophysiological base in man's central nervous system. On the other hand, already small disturbances in the structures of our central nervous system such as the plaques - dead brain neurons - or lack of proper quality or concentration of neurotransmitters in the limbic system or hippocampean area – can cause memory loss and then severe mental problems which can appear, for example, in the far proceeded cases of Alzheimer disease.

The substance and ontology of the microcosm of the material has been and is a continuous problem for physicists. The substance, structure, and functions of the mental have also formed and are continuously forming problems for human sciences and philosophy. Here I am suggesting the use an analogous strategy of the physicists. This means a trial to find the smallest plausible and testable elements of the mental and then use them to construct the other elements, which could possibly enable us to build a better understanding of the richness of the phenomena we live through in our experiential life.

John R. Searle, in his book of intentionality (1994, ix), states, that: "It is an objective fact about the world that it contains certain systems, viz., brains, with subjective mental states, and it is a physical fact about such systems that they have mental features". As mentioned earlier, it is a neuropsychological fact that our mental experiencing of the outer world needs the material afferent action potentials - encoded by our senses of the energies from the object of our attention - and the material - normally functioning - central nervous system to interpret it before the mental experiensings can be lived through. We need the unexplained emergent transformations from material into mental and vice versa, as presented in my ontological presumptions in Chapter 2 and Figure 2.3.

As maintained in Chapter 2, we are justified to believe that our mental life is bound to our brains abilities to transform the sense encoded afferent action potentials through emergent processes first into sensory memories which function as mental pre-primaries. From these the situation relevant ones our attention process selects to be processed into mental states of sensations. Sensations are assumed to function as mental primitives and search attributes which can recall a set of situation relevant concepts into our working memory, which enable the concept-based mental states of recalling, perceiving, knowing, understanding, and imagining.

The emergent brain processes are needed as well in producing all the other qualities of cognitive, emotional, volitive, and motivational mental states we experience. In all these cases the material base is in the memory traces in our neuronal nets and the experienced is the product of our brains' ability to transform them into situation relevant descriptions of the objects of attention. Analogically our actions are bound to another miracle of our brains, namely to its ability to produce situation relevant sets or flows of efferent action potentials - or the steering effects - for manifestations of our goal oriented speech and other motor actions.

In the ontology of this study, I have assumed that the primitives of the human mental of which we become aware are our sensations. They are processually formed of the sense encoded information flow mediated by the afferent action potentials. The attention process seems to select the situation relevant flow by using the triggering initials formed by our sensory memories. They in turn are activated by the continuous flow of the sense encoded afferent action potentials. Thus, our sensory memories form a real time or on line store of the afforded and available pre-mental initials to be interpreted into sensations and later into concept-based and then conscious perceptions.

Thus, based on the above-mentioned facts of neuropsychology, I am assuming that the core of our concepts of material entities is formed by our sensations. They are here seen as the phylogenically determined on-line connection to the selected and attended objects of our environment and its changes. They form the first mentally experienced descriptions of the objects of our attention. Here I am calling them **mental primitives**. The term mental primitive as a synonym of sensation is here assumed to be justified because our sensory memories as pre-primitives form then a real time set of channels to our environment and our body. Our sensory memory is holding the flows of the afferent action potentials in the nascent state or in the state of readiness to become transformed into sensations. We possibly are **pre-aware** of these sensory memories. I am assuming that our attentional process selects the situation relevant sensory memory channel and its flow of afferent action potentials and interprets it into the on-line flow of our sensations, of which we first become **aware**. These functions of our sensory memories seem to form their natural roles for the attention process in the RA-model of human mental. A sudden change in the environment may activate the attention process and we get a new flow of afferent action potentials creating a new set of sensations, which is possibly more relevant in the changing situation.

Sensations are then mental primitives because they form the first phase of the mentally experienced interpretations of the attended flow of afferent action potentials. By using the physical metaphor, sensations can be seen also as mental protons and neutrons of which our memory representations or our mental atoms, molecules, and concepts will be built. Some of the sensations – 'protons' - are mediating different types of values and meanings and some – 'neutrons' - are just describing the object of our attention in a neutral way. In this metaphorical description sensations can be seen as mental primitives because they are processually formed by our phylogenically shaped but ontogenically completed and continuously dynamic neuronal structures. According to the neuropsychology and brain research our sensations form

the on-line or the reality testing line to our environment. In the visual perception this line is the **dorsal stream** of information processing – (Goodale & Millner 1995, Kolb & Whishaw 1996).

In the RA-model of man and his mind, the mental primitives form the primary interface or the linking element between the inner mental and the outer material. These primitives can be described by conventional linguistic expressions and thereby inform the others of the experienced. As will be explained sensations are assumed to function as sensory attributes or search attributes; thus, they have the ability to recall a situation relevant set of other attributes and concepts to explain the sensed. Concepts form the ontogenic or the learned and remembered basis of the perception process. This corresponds to the **ventral stream** in processing the visual information (Goodale & Millner 1995).

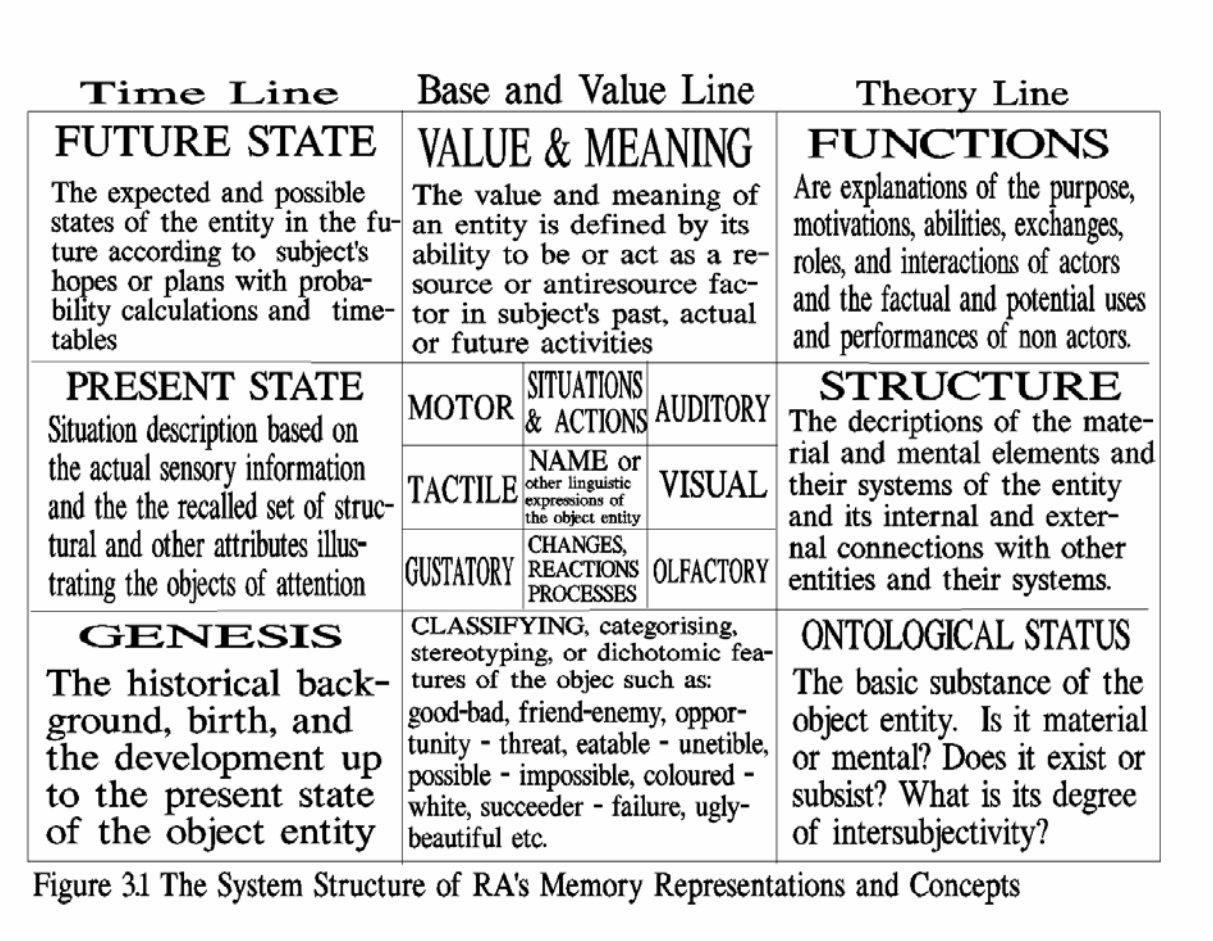


Figure 3.1 The System Structure of RA's Memory Representations and Concepts

Concepts as the atoms and molecules of our mental are formed just of the recalled and situation relevant sets of attributes of our memory representations enabling the classifying, naming, and understanding the sensed object of attention. They explain the different meanings of the object - and later on - its connection with the other entities participating in the situation

observed. They often have the testable and on-line sensory connection to the objects of attention and the memory-based explanation-line to the earlier experienced descriptions of them.

In the following sections, I shall describe and explain the hypothetical structure of our mental atoms and molecules and discuss the ways they are assumed to be connected with our everyday phenomenal life and its views of the world, of our roles, resources, situations, actions, and interactions, etc.

3.2.2 The Structures of Memory Representations enabling RA's Concepts

Figure 3.1 above presents the system model of a memory representation and concept of a singular material entity. We can form a system-model of our memory representations by asking: what do we usually remember about the objects we know very well? I am assuming that the total list of all the different features we can recall about a singular particular is our knowledge of it. The recalled set of features we use in a certain situation is here seen as our situation relevant concept of the object entity. Thus, our concept - not our total knowledge of an entity - defines our understanding the meanings of the object. Thus, concepts define also our interpretations of its situation relevance and then also our reactions and actions. Often the classifying or stereotyping attributes are all we need to confront an entity.

There is a considerable variety in the features or attributes individuals have in their long-term memory of the entities in their everyday environments. The sets of situation relevant attributes recalled to explain the sensed is varying still more. A specialist on a certain area can recall the detailed theory of the object entity, while a layman may recall just a few classifying or stereotyping features of it. Thus, the contents of our concepts explaining the sensed varies, but I am assuming that the system model of our memory representations can be used as a universal base for describing human memory representations, concepts, theories, and knowledge.

Figure 3.1 is formed of inner and outer circles. The inner circle - around the entity's name or some other linguistic expression referring to it - consists of eight squares describing entity's sensory attributes and observable descriptions of actions and reactions. The outer circle of the concept model is formed of eight squares describing entity's structural attributes that serve often as background explanations of entity's manifesting actions and reactions. I am calling

these attributes structural, because they often are verbal descriptions, which are built by using other, already known concepts.

This system model of human memory representations and concepts can be seen also as a formation of three columns, which are here called lines. These 'universal' lines of human memory representations and concepts can be briefly characterised as follows:

- The **base and value line** - in the middle column of Figure 3.1 – consists of the sensory-, value-, and classifying attributes of our memory representations and concepts describing the sensory, resource, and classifying or stereotyping features of the object entity.

- The **time line** of our memory representations and concepts consists of the descriptions of the history, the present state, and the believed or hoped-for future state of the entity to form the time-oriented total description of the object entity.

- The **theory line** of memory representations and concepts is formed by the descriptions of the basic substance, structure, and functions of the entity.

The structure of the recalled set of our memory representations, which are interpreting our sensations of the attended entities, is varying as a function of the situation we are living through. Thus, our understanding and our actions and reactions are functions of these recalled and situation oriented sets of descriptions of the object entities, not on the total collection of the descriptions we have acquired of them during our ontogenic history. As mentioned earlier this latter could be seen as our knowledge or knowledge base of the entity. Aren't we quite often asking ourselves that, why didn't I remember that and that happenings in the past when doing my decision? How thoughtlessly I have behaved!

Our ability to understand and control the situations we encounter depends then totally on our concepts. The sets of the memory representations recalled are not always the optimal ones. May be that - when understanding and realizing this human weakness - many political and business decision makers want to sleep overnight before deciding about new and complicated affairs.

The main parts of the structures and functions of concepts are testable features and manifestations of our long-term memory and our working memory postulated in cognitive psychology, (Baddeley 1997). You can always test your own and others memory representations and concepts just by asking what you or the others are recalling in a certain situation

about the situation relevant entities, objects, or events. In addition, you can ask, what features of the remembered situation or its details made the sensed understood. I am assuming that the universal in the human mental will be found in the different types and structures of our memory representations on which our experiencings are built. The sets of attributes collected in them are individual though certain degree of intersubjetivity is necessary to enable our communicative and other interactions and exchanges.

3.3 The Base- and Value-line of Concepts

3.3.1 The Sensory Primitives Forming the Core of the Base- and Value-Line

As mentioned above and seen in picture 3.1 the base-line of human memory representations and concepts' is formed of three sets of attributes: the central square is built of sensory attributes, which are briefly analysed in Figure 3.2.

MOTOR Motor senses transmit information from muscles, tendons and joints. By interpreting this information one is aware of bodily positions, orientations, locations and movements.	**SITUATIONS & ACTIONS** Memory representations of situations and episodes, where the subject and other actors have performed a set of goal-, role-, resource-, or situation-oriented actions and interactions.	**VISUAL** Fast interpretation of visual information and its meaning is the other system of remote control developed by the evolutionary selection process.
TACTILE Skin senses code information of temperature, pressure, pain, etc. Connected to small motor actions they give plenty of information of the touched object and its surface	**LINGUISTIC EXPRESSIONS** Names or other spoken or written linguistic expressions which customarily are used to describe the different features of the attended object entity. In case of theoretical entities the name and the conventional definitions are the only manifesting attributes of it.	**AUDITORY** Reflex-like interpretation of auditory information often makes it possible to define the sound source, its quality, direction, distance and meaning
GUSTATORY The ability to interpret gustatory information makes it possible to define if the food is etible and react immediately if you have something harmful in your mouth	**CHANGES & REACTIONS** Memory representations of different types of surprising changes in subjects environment and situation and memories of rsponses and reactions which were caused by them to the behaviour of the subject himself and the other actors	**OLFACTORY** Interpretation of the olfactory information helps to define the quality of air and food by smelling the gases they contain. Of crucial importance to many animals.

Figure 3.2 Areas of the Sensory Attributes of RA's Concepts and Memory Representations

The upper square presents the resource or value features of the object entity; the lower square presents the qualities defining the class or group of entities to which it belongs. The centre-square presents the collection of the sensory descriptions, which one can get from the entities in his environment. In the right column are those descriptions of the object entity we get via those senses, which can encode information from remote located objects.

On the left column are those sensory descriptions in which the sensing organ and encoder of information is inside subject's skin and body as in gustatory and motor senses or in physical touch with the object as the information via tactile sense. In the centre of the central column of the Figure 3.1 and 3.2 are the name and other linguistic attributes of the object entity. They can be expressed in spoken or written words or in some special sign system like the letter-signs of blinds.

All these sense-specific primitives or sensory attributes – except the linguistic attributes, which can describe also thought or imagined attributes - are here assumed to present us the materially manifesting, situation relevant, and real features of the objects of attention. We can get different types of sense specific descriptions through each of our six senses. We can 'see' the size, form, colour, actions and reactions as well as the changes in the linguistic descriptions of the visual sense modality of the object entity. We can get also many types of auditory descriptions and related linguistic expressions of the objects of our attention processes depending on the situation and events, which are going on. Through tactile senses we can sense and feel how even, rugged, smooth, firm, dry, wet, hot, cold, etc. the object is. Touching an entity provides us with this multitude of features, a set of 'concrete' descriptions of it. The valuation of this concreteness manifests in an often-heard expression when old friends meet after a long time: 'Let me hug you to feel and know that it is really you'.

As mentioned in Chapter 2, our sensations are assumed to act as search attributes, which initiate the interpreting process in our brain. All sensory and so also all linguistic attributes of entities can have the same role. This ability is based on the fact that linguistic expressions are often connected either observed ore thought structural or functional features of the object of attention. Thus all linguistic expressions can be used as search attributes even in concepts of theoretical entities such as value, motivation, soul, mind, concepts etc. Our actions are often connected with verbal expressions describing either the objects of actions or the acts and methods applied. This means that repeatedly we are performing ostensive definitions, which enables the learning processes of others following the episodes happening. The verbs used give the names to the seen actions and nouns the names of the entities encountered. This

hypothesis of the processual formation of our concepts sensory, linguistic, and structural attributes explains also the natural easiness with which children learn the languages their communities speak. Linguistic expressions get their meanings through the situations in which they are used. The finding of the mirror neurons gives a natural or brain-based explanation of our abilities to learn by aping, Rizzolatti and Arbib (1998)

Besides the processual formations of our memory representations and concepts also the interpreting phase of our sensations is a process, which handles the sensory recalls as search attributes. They in turn recall a set of situation relevant other attributes to form a concept-based perception. The experience of perceiving comes so fast after the primary sensation, that it is still discussed whether sensations and perceptions are distinct phases in the information processing or just one unified process made by our brains' nervous nets. Here they are seen as distinct processes, which accord with the dorsal and ventral streams of our visual perceptions. The sensory-streams function as search attributes, which enable the use of the earlier experiences by recalling the situation relevant memory representations. Our concepts are then connecting the collections of our experiences during our ontogenic histories with the object entity to interpret the sensed descriptions of the object and its meanings to us in the present situation.

Our sensations are thus assumed to function as interfacing links between our memory representations of entities and the actual moment just passing by in our outer - and also in our imagined inner - world. By comparing the sensed with the remembered, we can interconnect the outer happenings and understand their meanings to us. This processual connection between sensation and perception seems to have been one of the necessary conditions for the survival of individuals and species. Actors being able to learn or to use their memory representations to interpret the meaning of the sensed correctly - or in a situation relevant way - have been able to find food, shelter, sex partner, their ways and paths in the forests or other terrains, discern friends from enemies, and threats from opportunities, avoid threats and utilise possibilities, etc.

3.3.2 The Sensed Actions and Changes as Episodes, Scripts, or Views

In the central square in figure 3.1, page 68, there are two special areas of sensory descriptions of the actions and behaviour of the object of attention in varying situations. The upper square consists of observed situations and actions and the lower square of changes, process, and

reactions. Their contents can refer to individuals, groups, and their actions and interactions as the objects of attention. Usually these are formed of a set of consecutive events and deeds, which are stored in our long-term memory as episodes, stories, or scripts describing the views one has lived through. Some individuals have the ability to store the seen and experienced almost as detailed as a photographic presentation of the happened. These eidetic views of the happened enable them to 'see' and recall quite exact descriptions of the events. These memory representations of episodes can consist also the speculated roles, plans, and motivations of the other participants of the events on the recalled scene of experiencings (Paivio 1986 and 1991; Anderson 1995; Baddeley 1997).

The above concerns the cases in which the object is an actor or an entity that can act, react, or change during the interactions and exchange operations with the subject. Actions and reactions of an entity are important because they describe also its ability to be or act as a resource or anti-resource factor in some of subject's own or his communities' activities now or in the future. Thus, they define a considerable part of the object's real value and meaning for the subject, as will be explained later. This can be understood when we remember that all humans are actors and then in continuous need of and search for resources for their own present or future actions and metabolic and mental processes.

Thus, the sensory information of actors and their actions needs always explanations of different types. As mentioned above, the structural attributes are processed to serve this function. We often want to know why or for what reasons the seen actions and reactions were done. Thus, we need explanations of the actor's aims, goals, motivations, norms, values, and other reasons to understand the way they are acting or have been acting. The outer circle in Figure 3.1 is a collection of the most usual sets of explanations we use when trying to understand the actions and reactions of people and other actors.

Actions, reactions, and different manifesting changes form the main features of object's behaviour. Their representations form the core of the base-line of an object's concept in our long-term memory. They create also the need to find the reasons for the observed behaviour and the need to ponder their meanings seen from the point of view of subject's own plans and actions at the present moment and in the future. This is the reason why human concepts have in their base-lines squares for the value- and classifying attributes, whose structures will be discussed in the next two sections. The need to understand the behaviour of entities creates also the need to build or process the time- and theory-lines to their memory representation or concept as will be explained later in this chapter. The top square consists of a collection of

objects resource features explaining its values and meanings to the subject. The lower square on the value- and base-line consists of a collection of the classification attributes of the object.

3.3.3 Name and other Linguistic Attributes of Entities

In the centre of Figures 3.1 and 3.2 is the place for the object's name or other linguistic expressions referring to it or its qualities or behaviour. The term, name, has here a very common meaning; it can refer as well to nouns, which are naming the entities, as to verbs, which are naming the actions or changes we observe. The square can consist of linguistic descriptions of events, happenings, or of a sequence of happenings. Words are collections of phonemes or graphemes, which are experienced as structures of auditory or visual elements of morphemes, of which the meanings of words are built (Karlsson, 1994). The actual structure of the linguistic attribute can vary depending on the state, actions, changes, or other dynamics of the object entity or its relations with its environment.

Names and other linguistic descriptions of entities have the same ability - as all the other sense based attributes - to recall a whole set of situation relevant memory representations of the object entity into the subject's working memory for conscious review. When names and situation relevant sentences and other linguistic expressions are conventions, they are handy tools for linguistic interactions between members of the community that has created these conventions. This function of names, words, sentences, other linguistic expressions, and their different inflexions, forms the natural basis of our linguistic abilities. The observed or thought views or happenings recall also the situation relevant linguistic expressions.

In the evolutionary processes of human kind, the situation relevant linguistic expressions have had analogical processual forming as search attributes of the object entity as all other sensory attributes (Korhonen 1993). The situational image of entities and their actions and related expressions has been stored as elements of situation and action views. This is analogical with Paivio's dual encoding theory (Paivio 1991). Words and sentences can now function as search attributes and recall the situation view to working memory to explain the meaning of them. RA's views and Paivio’s images have some degree of analogy with the early Wittgenstein’s picture theory of language and Fodor's (1975) conception of the language of thought. RA thinks with memory representations of entities and speaks with the situation relevant linguistic expressions, which are stored in the same memory universe.

In linguistics, the smallest elements of word carrying meaning are called morphemes. Finnish language is rich in endings that are changing the referential meaning of the word. All nouns

have 16 cases. From any verb, one can derive thousands of meaningful expressions just by adding different types of meaning building morphemes (Karlsson 1994). A name is a symbol or symbolic sign, which is built of meaningful combinations of morphemes whose elements are formed of phonemes or graphemes. A name refers to the whole set of memory representations or descriptions individuals have collected about the object during their ontogenic histories. These collections of individuals' memory representations of entities form their knowledge bases, which is stored in their long-term memories. As said above, the situation relevant set of attributes of an entity is here called concept. They are subjective representations of objects with which they have been interacting and having exchanges. Individuals living in same communities have certain degree of intersubjective features in their concepts.

Through our senses, we can get the written or spoken names of the object entities as mentioned above. Blind people use signs formed by elements accessible by their tactile sense when reading texts. From the everyday experience we know, that children learn the first spoken names of the entities at home already under one year of age. We all have seen that children - long before they can speak - can show with hand the named thing and they bring it to you after they learned to walk. This phase in a child's mental and linguistic development is called symbol function. Through the everyday ostensive practice, the spoken words and their inflexions have become symbols of entities. This process gets its natural explanation by the structure of RA's concept's base- and value-line, where names form one set of the sensory attributes.

Thus, symbol function is then the phase of concept’s processual formation, in which the name attribute is connected as one of the sensory attributes of the memory representation of the object entity. This means that a repetitious set of morphemes is processed as a linguistic attribute or name of the entity with which it is used. The set of morphemes forming the pronounced ore written name has thus become a symbolic sign representing entities that need not to be present here and now. Morphemes can then be seen as the materially manifesting primitives of the word's referential meaning. Words and their different inflective forms are then built of sets of morphemes. The meanings of them are learned from the situation-oriented use of them. The referential and other meanings of written words - or sets of graphemes - are learned much later, often first in school or pre-school when children learn to read and write.

In the RA-model of concepts words, sentences, other linguistic expressions, and symbols are assumed to have the same function as all other signs. They serve as search attributes recalling

into subjects working memory the memory representation of the object, in which they are processed as sensory search attributes. To be more precise, the search attributes are assumed to recall the situation relevant features of the object, which have been processed during the interactions between the subject and the object. It seems that words as linguistic symbols - formed of graphemes or morphemes - are able to recall just the situations and changes that are described in their structures, for example, by some endings of words.

The cases of nouns and tenses of verbs can be seen as symbols referring to situation descriptions or descriptions of events or changes. This fits well with the picture theory of language of the early Wittgenstein (1953 > 1971). Human Beings seem to be situation oriented as well in learning the meanings of words as using them in analogous situations. The ability to use words in their different inflexions is created in interactional situations with the objects in question. Thus, the interpretations of words' referential and other meanings is also situation oriented mental episode. The sensed words with their endings in Finnish language or with prepositions in many other languages are utilised just as any other signs. They are used for recalling the due and situation relevant set of concepts and their features into subject's working memory as tools of interpreting their meanings. This can be seen as a natural explanation of our linguistic ability.

3.3.4 The Value and Meaning Attributes of Entities

The value attributes in the upper square on the base- and value-line consists of descriptions of object's resource features. They are seen from the point of view of subject's actual or potential actions at present or in the future. RA's values are then assumed to be based on the objects' abilities to act or be as a resource factor in his actions at the present or in the future time. Objects are carrying these abilities and resource features but the subjects who think and believe to need them are in fact creating them. Thus, values subsist only in the minds those subjects, who are actual or potential users of these resource features of the object entity. According to Greek mythology, king Midas of Phrygia, soon learned that the real value was not in gold, but in things he could use to satisfy his daily needs such as food and wine, which all changed to gold when he touched them.

RA's values are real or imagined resource features of the valued entities. Values can be described as creators of the mental forces, which furnish the entities with their value-meanings. Linguistic expressions have their referential meanings, but the entities to which

they refer can have, and often have, value-meanings. The resource features of groups and communities function as the mental powers to collect individuals to form tribes, clans, organisations, nations, states, and unions of states and nations. The speculations of increased national security, offered with the membership of European Union, was perhaps the main motivation for many Finns when they were deciding about their votes.

Money and power over other people are very handy and multi-usable resources. This explains, why they are so commonly valued and so eagerly looked-for. All of RA's values, even the moral, ethical, esthetical, and religious values, can be understood and explained by the resource features of the value carrying objects. Resource features make entities valuable and useful in the corresponding actions and activities of the valuing subject. As actors, we all are observing entities ‘with an eye’ to its possibilities of being or acting as a resource factor in some of our actual or potential actions now or in the future.

The value attributes of an entity are located in the upper square of the value- and base-line of RA's concepts. It is the collection of attributes, which make the entity useful, desired, or esteemed, which usually is a due function of its - real or imagined, actual or future - resource features. This line could be called also as action, value, and meaning line, because these features of entities are often based on the attributes on this line. The value attributes are structural attributes because they built up processually but sometimes by the subject's conscious logical or speculative thoughts and expressed by linguistic means using other already known concepts. Man in this study is seen as a rational and social actor whose well being depends on his possibilities to adapt to his environment through situation relevant actions and reactions. The possibilities to adapt depend on the resources one gets hold of.

Actions are here seen as goal oriented and steered uses of resources to achieve a valued end situation. In actions, one needs always both mental and material resources as mentioned above. Resources are forming the necessary conditions for any action. That is the reason why I am assuming that RA's values of entities are always in one way or another bound to the resource features of entities. If an entity does not have - now or do not seem to have even in the foreseeable future - any use for you, your friends, or your community, it hardly has any value; it can then be thrown away. Entities can have also negative value attributes or anti-resource features, which describe the difficulties, problems, and hindrances of actions caused by the entity; it's better to try to avoid them.

Value attributes are answering to the everyday questions: What purposes can a certain entity serve or to be used for? What is its value and meaning to us? These questions are often repeated ones, when one is faced with something new and unfamiliar. If the answer to this question is as plain as above stated, it means that from the psychological point of view, values are always mentally subsisting attributes in individuals' concepts describing the real or imagined resource features of entities.

The genesis of value attributes is described nicely in Uuno Kailas' poem, Sanoja, in which he puts in a child's mouth a sentence: 'Äiti on hyvä sana, se maistuu suukkoselta'. In English roughly: 'Mother is a good word, it tastes like a kiss' (Kailas 1963, Nummi 199?). Here the formation of value attributes to a child's concept of her mother is explained by the positive experiences of motherly love in which kisses and warmth of being in mother's lap and arms are the value and meaning creating features of mother.

The above statements of RA's values imply that we accept RA's aiming at survival and well being as a necessary endeavour in human and all other actors life. These efforts are always resource-bound and then connected with the values of entities. Are actions serving survival and well being good actions, can be asked. One can of course always ask - as G. E. Moore does - whether these can be accepted as the basic good things in our world. When adopting the evolutionary orienting, as I have done in this study, it is just natural to see the survival and well being as the basic values, because without survival you do not exist here and without well being the necessary conditions for the worthy life of a human being are lacking. The aiming at goals, which satisfy these values, seems to be one of the common features of all actors in the normal situations of life.

3.3.5 The Classifying Attributes of RA's Concepts

In the lowest square of the action and value line are those descriptions of the object, which are defining its class or category. They are structural attributes formed of a set of common attributes of the members of a group, class, or category of entities. The base-line of our concepts consists of attributes, which are either sensory or inferred from the sense-recorded behaviour features of the object of attention. The above value attributes were derived from entities' resource features. The basic evaluation of entities seems to happen through classifying them into resources and antiresources. The classification attributes serve us in fast decisions. They enable subjects to decide the basic meanings of the observed entity in the

situation one is living through. Thus, the classification attributes have been important in the course of evolutionary processes, in which the fast definition of whether the object is a threat or opportunity, an enemy or a friend, eatable or uneatable has had crucial consequences. The classification attributes are of importance even in to day's life. I have already referred to the natural rationality of actors basing on the use of classes. The mental load is light and its handling goes fast when you need just the class defining features instead of the detailed descriptions of all the features, of which an individual's memory representation can be formed.

The classifying process seems to use as criteria a set of features varying in number and quality. The use of just a few classifying attributes is rational and saves lots of mental work, though it may lead to faulty interpretations. It may lead also to insulting and stereotyping generalisations though people want to be treated as individuals. For successful interactions with a car on the street or a man on the sidewalk does not need many descriptions, only the rules how to pass by or come across. These rules are often all we need to take into account when meeting or confronting an entity: 'It is just a car on the street, that makes the noise, do not cross the street now'. The classifying descriptions form the set of attributes, which determine objects membership of some class or category. Class is here assumed to be formed by a set of entities having a common set of similar but not necessarily identical features. Often Wittgenstein's family-resemblance might be enough to form a class of entities. They have to manifest repeatedly enough to be formed as the criteria of the membership of the class in question.

For Piaget and Vygotsky the classifying attributes seem to have formed the totality of their appropriate conception of concept. The common features of a class or a universal were the key to conceptual thinking while singular particulars were objects of concrete thinking. According to Piaget, conceptual thinking was adopted first by teenagers while the thinking before that stage was based on the concrete, (Piaget 1936 >1983). Using the RA-model of concepts, we could say that first teenagers have had time and experiences enough to collect the classifying attributes into their concepts from the occurrences of classifying features of different familiar entities. In fact, the classifying process is one of the many features of the continuous dynamics of concept formation.

According to the above outlined RA-model, concepts are our memory representations of singular particulars with sets of attributes from its time-, base-, and theory lines. Often the valuing and classifying attributes of the object entities are in main role when confronting a

materially manifestin entity. All thinking needs and uses concepts, which are seen as the primary tools of all mental operations and so also used in thinking. Thoughts of concrete entities can get sense based mental primitives to give support to the mental operations, but the entities, which our mental processes and actions are handling, are evidently our memory representations. We do not meet universals but we can use classifying attributes of the encountered singular particulars. This happens in case the other attributes are not available or are not needed in that particular situation. This type of automaticity of our mental processes is part of our natural rationality, I am assuming.

The first classifying operation seems to happen unconsciously and with a mental reflexlike process describing the objects basic meaning for the subject. From the evolutionary point of view, one can understand that this has been one of the necessary conditions of survival. The resource features must have been connected to the sense based features of the entities. Objects visual appearance, voice, or its outer manifesting behaviour have been and still are the signs recalling the resource or hindrance features or the basic value-meanings of the object into one's working memory for conscious review. Must I flee or fight, has been the question and challenge for our ancestors; sometimes even for ourselves also to day.

When perceiving an singular object entity, we can usually recognise its belonging to a class or category of entities which we can name and about which we may recall some basic features. Unrecognisable and unclassifiable entities evoke curiosity and often fear because no explaining attributes are recalled. As stated above, perceptions are functions of individuals' ontogenic histories during which they have formed the interpreting, valuing, and classifying structures into their concepts of entities. Perceptions seem also to be functions of the situations. The cues contained in the sensory information of the object are furnishing them with their meanings by recalling the situation relevant attributes to explain the sensed. The experienced resource features of entities may vary along with the situations and their internal changes. RA's values are then subjective and situation related and so are RA's ways of classifying objects, though certain degree of intersubjectivity always exists.

An example of this situation relativity is implicitly in the following exclamation of a teenager: 'Now, the devils came! Put the noise down and the booze in bags'. The devils were his parents whose coming back home he heard when his father's car was parking in front of the house. The window towards the street was open that late April night when a group of juveniles were having their spring party at the teenager's home. The loving and caring parents had a new, situation relevant, attribute because their coming meant the end of the hilarious party. The

parent had now the role of an anti-resource factor stopping or at least changing the nature of the laughter and delight of the cheerful night.

3.4 The Time-Line of Concepts

3.4.1 Does Time Exist or Subsist

What is our time orientation based on? It easy to find that about all important entities - family members, relatives, friends, people we know well, our homes, cars, computers, etc. - we usually know their origin or something about their history, present state or situation, and something about the future states or plans concerning them. In the RA-model of concepts, the sets of time-oriented descriptions form the time line of our memory representations and concepts. Without history, we do not understand the present and cannot adapt ourselves to the future. The time-line of concepts is part of our pursuit to find causality and reason in the behaviour of people, our selves, and other entities. Already Augustine said in his Meditations that we have the history and future in our present thoughts. This is one of the natural facts about our memory functions as our everyday experiences are repeatedly proving us.

In the left column of Figure 3.1, is a set of the structural attributes forming the time-line. Its attributes are formed of descriptions of object's history, its present state, and its speculated, hoped-for, planned, or norm defined future states. In understanding the world and its happenings, we seem to need the time lines of its entities. From our everyday experience, we have these time line features of all entities, which we see important for us. We have the descriptions of the personal histories of all of our relatives and good friends. Most of the membership lists of different organisations have brief descriptions of family relations, studies, and work histories as elements of the curriculum vitae of their members.

Already Aristotle needed the Genus for his concepts. Similarly, Väinämöinen - the wise man and soothsayer in Kalevala that is the collection of Finnish national epics - was searching for the magic words to solve the problem of the genesis of entities. Understanding individuals and particulars seem to need the time line especially the historical backgrounds as one area of their basic features.

As mentioned in Chapter 2, nature has hardly any humanly experienced time only more or less regular processes and changes, which are functions of the forces affecting them. The structures in our Universe have their internal cyclical processes and mutual interactions, which are steered by the four basic physical macro and micro forces. Organisms have their

time-spans and time-cycles steered by different kinds of metabolic and other biological processes. Their time-lines are possibly present already in their genomes. According to the RA-model, humans have their time-lines also in their concepts. Thus, time seems to subsist also in our concepts of entities. In Figure 3.1, the time line is in the left column, which is formed by three sets of structural attributes describing object's history, present, and future.

Thus, our time-lines have their origin in cyclical – annual, monthly, daily - changes of natural environment. Those who learned to plan and make time- and change-oriented schedules survived, others not. Thus, the evolutionary processes seem to have built the human calendar structure in our memory representations of entities. All entities, which are important to us, have their genesis, history, present, and future descriptions in their memory representations in our long-term memory. One of the main functions of our concepts is to make entities understood. Understanding seems to need the processing of time-lines into our conceptions of the world. To keep track of our daily routines we need the time-lines in our calendars and computer schedules.

3.4.2 The History of Entities as a Base for Understanding

The genesis and history of entities seems to be important to really understand its present situation and its future. Individuals and nations are searching their roots, physicists are trying to solve the problem of the genesis of our Universe, anthropologists try to track down the origin of human kind, etc. Professional registers hold information about members' background and ontogenic history. History evidently is important, it lays the base for all other features of an entity.

For understanding the present and orientating to the future, we need the history. Thus, it seems unavoidable that our memory representations and concepts have their time lines. The time-lines with their attributes describing the history, present and future states of entities seem to form the only realistic explanation for our conception of time. In the RA-model of man's concepts as memory representations of singular entities and their systems can most rationally consist also of the time factors of entities. We are living between the history that we remember and the future that we can create by our plans and imagining abilities. Both of these dimensions are connected with the memory representations of the singular particulars in our environment with which we are interacting and having mental and material exchanges. Universals do not have time, as we all know. Our ability to control the time seems to be

bound on the time-line attributes of our concepts. Naturally, our watches and calendars with their detailed schedules and agendas are also helping us in that task. In fact, I am assuming that whole structure of our conception of the experienced time is somehow bound to these time line structures of our concepts.

Since our concepts are formed processually, they follow in their basic structure the phylogenic rules we - or our brains - got as members of the species Homo Sapience. The contents of the structural elements of our concepts are here in turn assumed to be dynamic functions of our ontogenic histories. According to cognitive psychology, the descriptions of episodes and individual histories are memory representations called scripts stored in our long-term memory. They tell us the structures of often repeating situations or the ontogenic stories of the individuals we know well enough. We know our children's history, the present situation, and are planning or at least following their future plans. We are interested about the birth, present state, and the future of our Universe, our solar system, and of the fate of our planet Earth and its inhabitants. From our everyday experience we all know that the past enables us to understand the present and the past and the present situation together enable and motivate us to the creative imagining to set the goal states of our future plans. We simply need the time lines of our memory representations to manage the relations with our fast changing environment.

3.4.3 Sensations and their Interpretations as the Continuum of our Present

Our present seems to be a continuum of experiences recalled by our sensations. We reason and understand their meaning by using our historical wisdom and our speculations concerning the future. In the previous, I have assumed that our sensations form our on-line sensory interface to our present environment and its changes as they happen. This interface is real and on-line connection to the material world around us. The meanings of the sensed entities are interpreted by our concepts of the objects of attention and by the situation view, which we have recalled and are using as the base for interpretations. Thus, we are experiencing the present through our history, which has formed our concepts, conceptions, and views of the entities of the world and situations. Our present moments seem to be just a set of concatenated experiencings, the meanings of which we understand by using our historical wisdom and our speculations concerning the future.

Our experienced present can consist also of our plans, imaginations, and dreams as well as our illusions, hallucinations in certain cases. The functioning reality control is totally lacking usually only in the cases of pathological hallucinations. If the sensed does not conform to the experienced, we usually repeat the sensory operations to secure its authenticity.

On the brain level this two-phase interpretations and their internal connections are exemplified by the dorsal and ventral streams in the processing of visual information as mentioned in Chapter 2 (Kolb & Whishaw 1996, Ungerleider & Mishkin 1982, Millner & Goodale 1995). From the evolutionary point of view, it is fully understandable that we need these on-line and memory-line interpretations for all of our interactions with entities in our environments. These double channels are needed on the areas of all sense modalities, though the visual and audible channels may be the most important ones.

3.4.4 The Hoped-for or Planned Futures of Entities

In the RA-model of concepts, I am assuming that our experienced present is just a moment between the past and the future. The mood of our experiencings depends on the past experiences and on the believed future. Humans seem to be situation and future-oriented beings. The histories of entities help us to understand their present. Our need to take care and worry of our own, relative's, and even our neighbour's affairs processes or builds to our concepts the attributes describing the planned or speculated futures of entities. Thus our intentionality - seen as the future steered goal-orientation in planning and decision-making - is just a natural feature of human beings; we are - in our mental - always aiming at a varying set of valued goals somewhere in the future. Some of them form our actual goals.

The thought or speculated positive future states of affairs forms - almost always - the motivation ground for our plans and activities. The natural curiosity of human beings is often aiming at better knowledge and control. If we find rules or other types of invariant features of entities and their behaviour, we can forecast what will happen in the future. This means an increase of the controlling abilities for the individuals who know it. That is what a scientist and every individual are aiming at; the ability to control what happens to us serves all our needs and especially our security needs.

Our ability to imagine things, which do not exist yet anywhere, forms the basis of our creativity. The human cultures and their dynamics are based on this ability. Al inventions

from the stone axe to the modern computer-steered production lines, atomic power plants, and www-nets through satellites and light-cable-based Internet connections are manifestations of this human creative intellectual capital and future orientation. They all need also the time-line in our concepts.

3.5 The Theory Line of Concepts

3.5.1 The Basic Substance of Entities

The human desire for knowledge and the final explanation of the substance of the entities of the being has motivated scientists as well as everyman to research the world and its fundamentals. As seen above the time-line of RA's concepts offered some explanations of the manifesting action or other sensory features of the objects of our attention. The history or future of an entity or both of them made also the observed understood. Analogically all structural attributes surrounding the central sensory attributes serve as explanations of the seen or other ways observed or imagined features of the object as do the attributes of object's resource and classifying features. The **structure** of entities, their **functions**, and their basic **substance** form the elements of the **theory-line** of RA's concepts. These elements are often used to explain the sensed or otherwise experienced features of the object of attention.

The lower square on the theory line is reserved for the ontological explications and explanations of the presumed basic substance of the research object. Concepts as recalled sets of the different types of our memory representations are assumed to have their material existence in the 'memory-traces' of the molecular structures of synapses in our the neuronal net-systems. The emergent system processes of our brains' neuronal nets create concepts' mental subsistence. From the results of neuropsychology and brain research, we know that there are no memory representations, no concepts and knowledge without functioning memory systems. This is proved also by many cases of Alzheimer disease, which give often very dramatic evidence what can happen without functioning memory processes. The materially manifesting causes of the disease may be just a relatively small amount of plaques or dead neurons in the prefrontal area of cortex or in hippocampus or changes in the chemical concentration of some neurotransmitters.

In physics, the substance problem is thought to be solved by finding the smallest elements of material entities. However, just physicists had found the empirical proofs of the existence of

the sixth and last quark, there appeared thoughts about the elements of quarks, though they are not necessary for the standard theory. Thus, the analytical approach seems not to be able to solve the problem of substance, but it offers a better way to control the object and its behaviour. The behaviour of electromagnetic radiation can be controlled and calculated quite well, though its quanta or photons have features of both an elementary particle and a wave-motion.

In this study, I have thought that the elements of the experienced or the human mental have their primitives in the sensory descriptions of entities. The primitives or the sensory attributes together with the structural descriptions of the objects of attention form our concepts or the atoms of our mental worlds. They in turn are formed of the recalled and situation relevant parts of our memory representations of the entities of the being. They make the sensed an understood and then controlled and situation relevant part of our world view.

How well these mental elements can explain the phenomenal world of humans will be discussed in Chapter 4, where the scene of experiencing and steering will be postulated as the playground for our experiencings. Our lives are formed of the concatenated moments we live through of the rich, dynamic, and varying spectrum of our experiences. According to my ontological position, the substance of our mental is just in our ability to have this richness of experiencings. The phenomenal or experiential substance of our mental is an emergent product of our central and peripheral nervous structures and their system effects. As postulated in Chapter 2 the emergent and steering transformations form the links between the material and mental dimensions of human beings and possibly all actors in our Globe.

I see it important to explicate the ontological status of all research objects in human sciences. Material entities have existence that manifests in various forms in space, phase, and state dimensions having different functions of time as assumed in chapter 2. Mental entities have their subsistence as memory representations and concepts and conceptual structures in our minds. **Theoretical terms** like concept, knowledge, motivation, language, culture, organisation, economy etc. refer to theoretical entities. As will be seen later, the concepts of theoretical entities are formed of structural attributes, because the only sensory attribute in their concepts are their names or other linguistic expressions such as definitions. The definition is a way to condense the descriptions of the structural attributes of it. Thus, the mental representations of theoretical entities can have their name, definition, or a metaphorical expression as the only sensory attributes. Theoretical entities have their subsistence based on the system effects of our brain's neuronal nets. They are often created

and communicated with the help of definitions, through which one can create and use some intersubjectively understood terms and concepts as mentioned earlier. The degree of intersubjectivity depends on the intensity of the communicative and other practical interactions between the members of the community using them. Sometimes a good metaphor can increase the intersubjectivity of the theoretical terms and concepts.

3.5.2 The Structure of an Entity as an Evidence of its Existence

Knowing an entity means usually that one knows besides its overt and manifesting features also something about its internal structure and its main functions or actions and processes it can perform or participate. The more detailed one knows structures of the mechanical, electrical, hydraulic, gasoline, steering, brake, etc. systems of one's car, the better one understands its functions and performances in different situations. The need to know the structures of entities seems to be typical to our species. This is seen in children's devotion to build and take apart their toyblocks. It can be seen in the enthusiasm with which physicists are hunting for the smallest primitives and the largest totality of our micro- and macro cosmoses. It can be seen also in the furious eager of brain researchers and cognitive neuropsychologists to find the brain structures, which are storing our memory representations and performing or participating in the interpreting processes in which the afferent action potentials are transformed into our experiensings, which we live through in our phenomenal worlds.

The nervous structures in our retina are able to transform the varying energies of light quanta or photons into a continuous flow of afferent action potentials of which our visual brain system builds us the colourful and living world we perceive. The phenomenal is created of the on-line sensations and their explanations performed by our earlier experiences, or by the situation relevantly recalled concepts and their attributes. As mentioned earlier, the dorsal and ventral streams in the processing of the visual information seem to be the material manifestations of this miracle. Thus, the structure may help to understand the phenomenon we experience. However, the question of the transformation from the material afferent action potentials into mentally experienced descriptions of the objects of attention seems to prevail as an unexplained problem without a satisfactory explanation. Some philosophers - like Lauri Rauhala - think that this ontological transformation may stay interminably a question without a good answer.

The structure of RA's concepts in Figure 3.1 is a trial to illustrate a natural and somewhat plausible structure of our memory representations and concepts; we use concepts to make the sensed, understood and structures and models of concepts to understand what concepts are. The inputs to our memory representation are assumed to be in the form of sensory descriptions or the mental primitives of the observed entities. The inputs can be also structural attributes, which are descriptions, in which other, already known, concepts are used. Any entity - even an imagined one - can have an endless chain of structural attributes to describe and explain its substance, structures and functions. Associations can be seen as situation relevant and recallable structural attributes of an entity. Our everyday knowledge is formed of these chains of sensory and structural attributes of entities with which we have been or are living.

In structuralism, the manifesting phenomena are often explained by the postulated structures of the assumed theoretical entities. The observed facts are explained by theoretical structures. The RA-model is a trial to explain the main features of the human mental by testable memory representations and by the theoretical structures and functions of RA's concepts and RA's steering system, which are built on them.

3.5.3 The Functions of an Entity as an Evidence of its Existence

The functions of entities form an important part of their concepts and of our understandings of them. The function of a car is to move us reliably, comfortably, and perhaps in a valued way to places we want to go. The function of a house is to offer a comfortable and cosy place to live. We seldom know the details of a modern car's electronically steered brake system but we can feel and experience how nicely they function. Our understanding is based on the brake's functions. The functions of the theoretical entities, such as memory, mind, and motivation, are often used as a proof of their existence or to describe and explain their substance.

In this study, the postulated theoretical entity called concept will be described both by its structure and by its functions to explain their role in directing the human mental actions and overt behaviour. RA's concept's structure and some of its basic functions have been described in this chapter and its role in directing the behaviour of human beings will be studied more detailed in Chapter 4. RA's concepts and mind or the planning and control system are postulated theoretical entities, whose structure and functions should be able to describe and explain some of the common conceptions connected with the human mind. The postulations

of the structures and functions of theoretical entities are justified, if they offer a testable, simpler, easier to understand explanations, and better forecasts of the manifesting features of the actions and reactions of the research object.

3.6 Concepts, Theories, Conceptions, and Views,

3.6.1 Concepts, Theories, and the Theory of Concept

According to a dictionary definition (Random House, 1998), **'Concept** is a general notion, idea, or construct of something formed by mentally combining all its characteristics or particulars forming a conceived or intuited object of thought'. According to the same source, **'Theory** is a coherent group of general propositions used as principles of explanation for a class of phenomena; Einstein's theory of relativity. It can be also a proposed explanation whose status is still conjectural, in contrast to well-established propositions that are regarded as reporting matters of fact.'

Concepts have here been thought to be the atoms and molecules of the human mental. They are - in most cases - formed processually of the mental primitives or sensations and structural attributes. They are used to form the conceptions, views, and other structures of our memory representations. They all consist of collections of descriptions of singular particulars and their systems. The simplest level of describing an entity is the use of classifying or stereotyping attributes and forgetting all of the other descriptions. As noticed earlier, Piaget and Vygotsky seem to have used the term concept for referring to an entity, which seems to remind a set of classifying attributes in the RA-model of concepts. The same concerns most writers of concepts in cognitive psychology (Baddeley, Anderson). Even Murphy in his Big Book of Concepts (2002) sees concepts as classes and/or categories. Concepts for them seem to be something universal and untouchable while material entities are concrete things and they could be handled in the human mental as such with their sensed dimensions.

The complete description of the RA-model of memory representations and then also of concepts is formed of their base-, time-, and theory lines with all of their attributes and their connections and links with other entities. The contents of memory representations and concepts of different individuals vary in a large scale depending mostly on their ontogenic histories. Anyhow, concepts are the only tools individuals have to understand oneself, the entities in the world around them, and the relations between the two. Thus, concepts provide

individuals with situation relevant abilities to understand and cope with the entities of one's environment. They are dynamic entities developing along with the exchanges and interactions individuals have with their environments during the whole span of their ontogenic histories.

In the RA-model **theories** of entities can be formed by a conscious use of the system model of human concepts in Figure 3.1 by emphasising the descriptions of concepts' theory lines. This means that besides the descriptions on the base and time-line one is focusing on descriptions and explanations of entities' real substance, their material and/or mental structures, the functions they are or will be performing. Good theories provide us with explanations and forecasts of entities' actions and reactions, and their reasons and motives if the objects are rational actors. Memory representations and concepts are formed mostly processually, but theories are built by systematic and conscious use of all available resources of information and planned tests and experimentations.

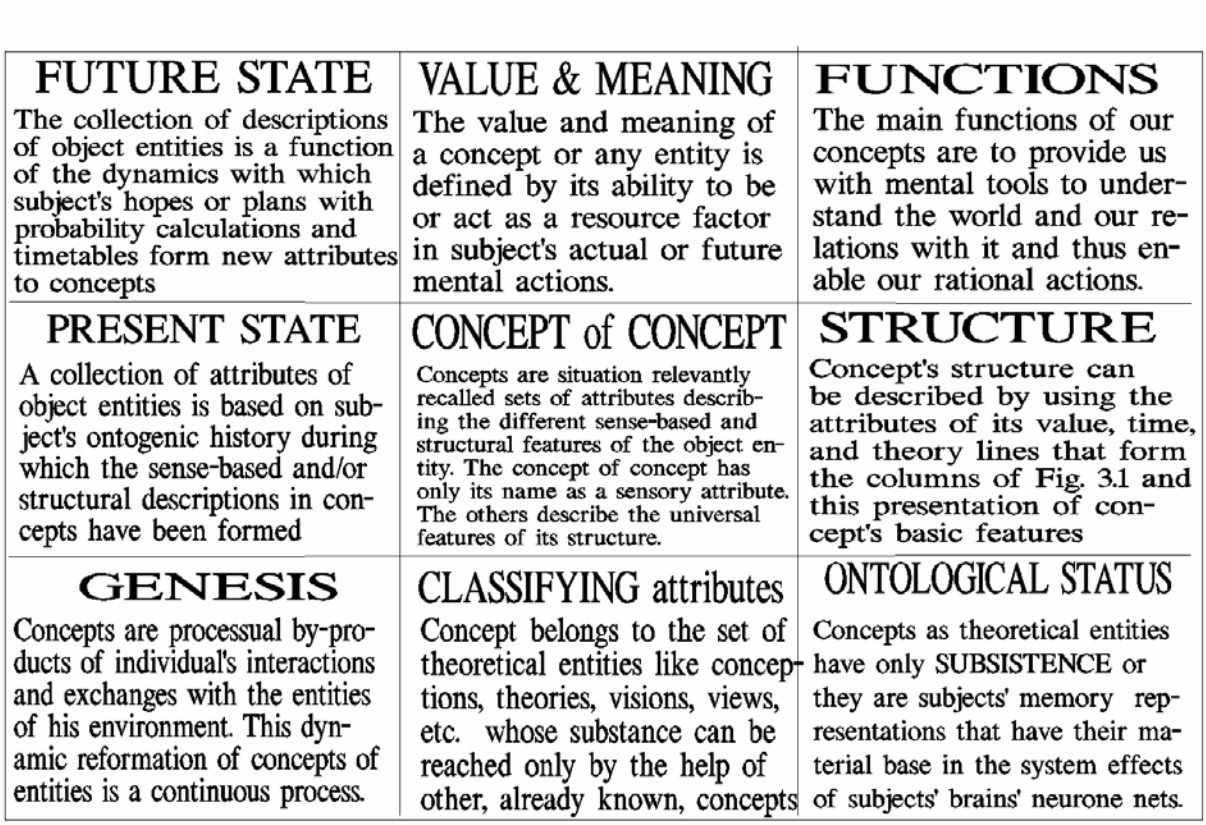


Figure 3.3 The Concept of Concept or The Theory of Concepts

Theories can be explicated in a set of rules or laws that the properties, characters, behaviours, or actions, which the class of object entities in question are obeying. The difference between concepts and theories is evidently just in that the former are concerned about a singular particulars, whose common features are described with the classifying attributes; theories are

built by systematic search for the laws or rules the classes of entities obey. Layman's theories are just rules of thumb, which have been seen to hold true in certain types of cases. The system model of man in figure 2.1 can be seen as a simplified theory of man's basic features. It is a simple delineation of a universal model of man's substance, structure, and functions formed by the phylogenic history of man's evolution. Correspondingly the system model of RA's concepts in Figure 3.3 on page 90 can be seen as a repetition of a **theory of concept**, because it is describing the assumed universal structure and functions of man's concepts and its mental substance and its subjective nature having nevertheless a certain degree of intersubjetivity.

Theories can be formulated either as rules of thumb for everyday use or as common rules or laws for scientific purposes. Theories can have varying degree of exactness with which its rules and their attributes are describing, explaining, and forecasting the behaviour of the object of the theory. The best explaining theories approach the true or at least satisfactorily functioning description of the objects of research.

Our concepts are in fact here seen as systematicly, though often unconsciously, formed collections of sense based and structural attributes describing a certain object entity. These attributes can describe the object's genesis, present, and future states, its structure and functions, its values and meanings, its actions and reactions in different situations. **Theories** can then be seen as **systematicly** and consciously **built concepts** having a thorough set of attributes on all the base-, time-, and theory-lines describing all the different features, actions, reactions, substance, structures, and functions of the object entity.

3.6.2 Concepts, Conceptions, and Views

As mentioned above, one way to see the referent of the term conception is to see it as the collection of all the situation relevant attributes of a singular object entity. Its function is to form a wider and many-sided view of the object and its relations and exchanges with its environment. The attributes describing the object's relations with other entities recall also the concepts of those entities with which the relations are built. The conceptions of actors are often related with their ways of acting and reacting and their relations with the other actors and members of the community in question. As mentioned earlier, our conceptions of people include often also some descriptions of the **moral and ethical quality** of their ways of planning and controlling their actions and reactions. This is important, because the moral

qualities of people form often an important set of criteria when selecting friends, companions, and members of an organisation or a group.

Views in the RA-model are the combined sums of the subject's concepts and conceptions concerning the entities in the actual situation and its environment. Views are conceptual structures, which are we use in our mental operations. They are 'visualized' stories or **scripts** of a set of concatenated happenings, actions and reactions of a group of people in a certain situation. This 'visualization' is perhaps some kind of 'memory-based imagining' in which even the situation relevant linguistic expressions form one set of attributes. In chapter 2, figure 2.1 the RA's mental head is framed with a world-view, role-view, resource-view, situation, and action view. I briefly outlined them in Chapter 2 and they are described in more detail in section 4.1 in the next chapter. In fact, I am assuming that all of our concepts of entities are formed in different types of situations. Thus, the role and other meanings of entities are natural attributes of our concepts and conceptual structures we use.

These four views are the main items used in planning and executing of RA's actions and interactions with the environment. In views, the time and value lines of concepts have an important role. They are steering our intentions or our interest and goal setting processes. Views can be seen as the total frame of concepts and conceptions explaining the object entity in a certain situation. As views are formed of concepts and conceptions, they consist also of the expected, hoped-for, and norm controlled future states of entities. Thus, they are assumed to be able to direct our actions toward the goals connected with the valued futures states of affairs. I am assuming that human goal orientation and intentionality of actors get their natural explanations through the functions of the value attributes in our concepts and views. In chapter 4, I am going to discuss RA's views as elements of the total framework of RA's steering system seen as the system model of human mind.

With concepts, conceptions, and views we can have the hold of the entities and their situations in the world. With the words and sentences, we can recall the concepts, conceptions and views and then manifest our meanings to the other members of our communities. The common concepts of the members of a community form the bases for communicative actions and interactions by enabling the mutual understanding of the members of the community.

Having now framed or sketched the structure of RA's concepts, I am going to postulate the structure of RA's steering system. I see it as a system model of the human mind. Its centre SCES or the scene of experiencing and steering is the mental space where individuals use

their concepts, conceptions, and views as tools of mental actions like thinking, planning, deciding, etc. With concepts, individuals can manipulate all the entities of the being of which they have processed a proper set of memory representations. They can be recalled as situation relevant sets of attributes for conscious reviewing and interpreting the meanings of the sensed, imagined, remembered, or thought. To compress the above, we could say that concepts are the individuals' mental tools to plan, decide, implement, and control their actions and interactions with their environments and the other members of their communities.

4. RA'S MIND STRUCTURED BY HIS CONCEPTS

Motto of Chapter 4:

HUMAN LIFE is a continuum of moments and events of experiencings to which a peaceful sleep brings a refreshing pause and the sleep of death its final end.

4.1 RA's Views as Frames of his Mind or his Steering System

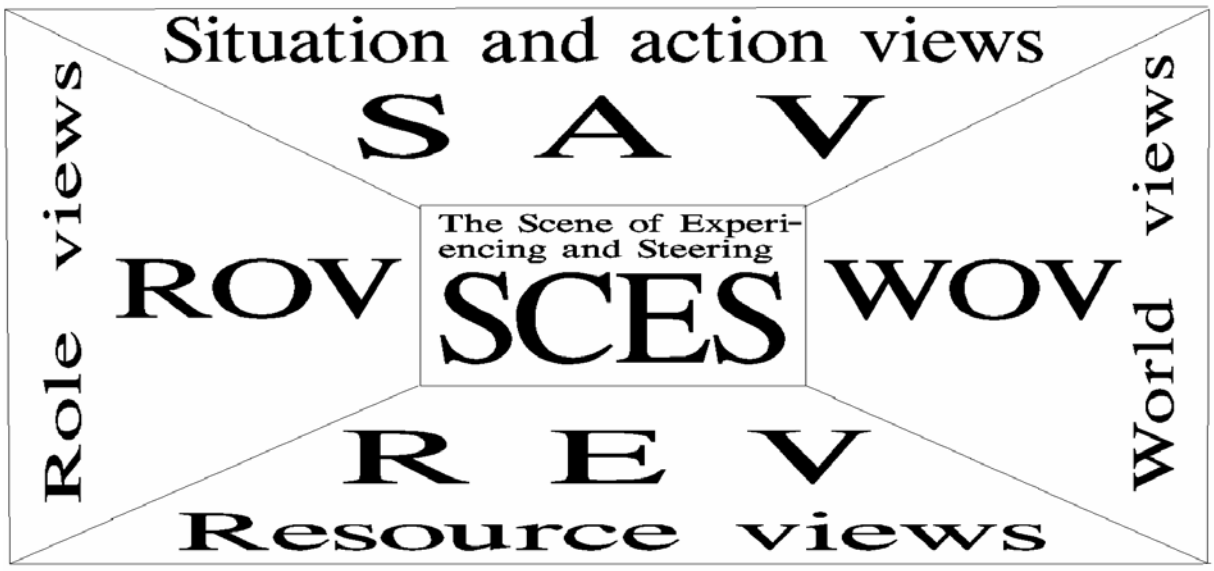
According to my ontological position the being is formed of material and mental entities. The latter are our memory representations of the entities of the being and the mental states caused by the encountered entities and their meanings. As mentioned earlier, the human mental is always an emergent product of our central nervous system. We do not exactly know how the experienced is transformed form the material or the electro-chemically encoded information hidden in the flow of afferent action potentials our central nervous system receives from our senses. All descriptions of the mental entities, such as memory representations, concepts, mind, and steering system, can be taken as metaphors aiming at easing the understanding of man's phenomenal experiences, thinking, and actions.

A model of RA's **steering[9]system** or his planning, decision-making, and control system is presented in figure 4.1 on page 98. It is assumed to be an emergent creation of the human peripheral and central nervous systems. Our brains' emergent abilities create and maintain the interpretation system for the outer or sense encoded information. The experienced interpretations are based on the concepts recalled in our working memory for conscious review. Our long-term memory and working memory provide us with the tools for our mental life. The emergent processes of our brain system produce all the phenomena we experience. I assume that the centre of the steering system is formed by RA's scene of experiencing and steering or SCES is situated in our working memory, as mentioned earlier. Our working memory has its physical space probably in our prefrontal cortex, which has many on-line

[9] As explained earlier, the term **steering** is used because it is short and because all of our planning, decision-making and control operations contain both concept-based or conscious and processual or unconscious structures and functions to which the term refers.

connections both to other cortical and subcortical areas and centres. I assume also that the four concept based views of RA - which were briefly described in chapters 2 and 3 - form the explaining and empowering dynamic ground and frame for our understanding, planning, and control endeavours.

RA's steering system forms the centre for our phenomenal life. RA's concepts, conceptions, and views are formed of the recalled elements of the real and testable memory representations. Thus, they function as the basis for the phenomenal scenery described in this chapter. The four framing elements of RA's steering system are: RA's world-view, role-view, resource-view, and situation- and action-view. I am assuming that individuals' situation orientation is based on the knowledge of their own and all other participants' views of the world, of their own resources, and of their roles, which are situation relevantly recalled into their working memory to form the frames in any new situation. In the next four sections, I shall briefly illuminate their role in the totality of RA's mind or his steering system.



Ficure 4.1 The Main Elements of Mind or RA's Mental Steering System

4.1.1 The Structure and functions of RA's World-view

RA's picture **of the world** - or his **world-view -** gives him the answers to the following questions: What is there in the world? What kind of singular entities and their systems, relations, actions, and interactions are there? In the history of human kind, primitive magical explanations, ancient legends and myths, and different religions have tried to answer to these questions. The magical still seem to form parts of the dynamic conception of the world of

modern man. The scientific picture of the world is formed by the best explaining theories as results of all the different sciences. Individuals' pictures of the world are functions of their ontogenic histories.

RA**'s world-view** has the answers also to the second question: How should the things out there be? This concerns at least those entities about which individuals are interested and which are of importance to them. We could say that the bloodshed in Kosovo or Eastern-Timor should have been stopped much sooner or, all wars should be criminalised by global laws based on global ethics. These 'should-be-states' are attributes of RA's concepts as assumed in chapter 3. They seem to be processed by our basic values and principles according to which we are orienting in the world. RA's world-view, WOV in short, is consequently a collection of RA's memory representations of the entities of the being known to him/her. RA's WOV consists thus of memory representations of singular particulars and their systems, classes, relations, interactions, and exchanges of information, material, and energy with each other and with their environments. The representations describe the situation as they are perceived now and descriptions of the hoped-for or believed future states according to the values and principles of the subject in question.

In the RA-model, the term view refers thus to the conceptual structures of the object entities. According to the model of concept in Figure 3.1 in Chapter 3, this means that the descriptions of entities' time-, theory-, and value-lines, are under a dynamic, continuous, and partly conscious structuring process. Thus the description of a singular entity in our world-view audits not only of its present situation as it is now, but in addition, it is reviewing its history and the situation that is planned, hoped-for, or for moral reasons to be achieved at some point of time in the future. These future states are often based on the one hand on the knowledge of the present situation and the history, and on the other hand on the values, norms, principles, hopes, and plans we are connecting with the entity in question.

RA's world-view is thus a collection of concepts and conceptions of all the entities, their systems, and relations the subject has encountered often enough during his ontogenic history. The situation relevant memory representations can then be recalled, if the needed memory traces are formed and refreshed often enough. The function of subject's world-view is to enable the forming detailed descriptions of the entities present in the situations one is living through. This is made possible by the structures and functions of our situation relevant concepts as presented in chapter 3. The attributes of the value and meaning line are especially

important, because many of the quick reactions are based on the classifying or stereotyping attributes of the encountered entity.

The evolutionary background of our emotional reactions, for example, are here assumed to be based on the stereotypical class division of entities into threats and possibilities, friends and enemies, or resources and anti-resources. In the evolutionary processes those individuals, whose memory representations could interpret correctly the remote information of an object of attention encoded and mediated by the visual, auditory, or olfactory senses, had the best possibilities to provide oneself with food and shelter. They had also the possibilities to avoid the different kinds of threats and even the danger of becoming eaten having time enough to prepare for flight or fight. The ability to interpret the information mediated and encoded by our 'remote-senses' can be explained just by seeing concepts as collections of memory representations as means for understanding. Thus, any sensation can act as a search attribute recalling the situation relevant concepts into subject's working memory for conscious review.

Nature of action	Division of steering	Levels of action & steering / Resource areas	Intellectual & rational	Social & communicative	Biological & neurophysiological	Material, economical, and political
RA's actions aimed at control of reality	Conscious Processual	THE CORE SELF based on individuals' knowledge of their capacities of	Rational explanations and theories of the entities of the being and their actions	Understanding the roles, values, norms, and principles of the communities to which one belongs	Seeing that the mental features of personality need their background in biological neurosystems	Seeing actions as exchanges with the other actors having economical, social, and political interests and goals
		MODEL CREATION based on systematic use of individuals' creative powers to produce new models for actions	Continuous questioning of the quality of the models and the ways they have been applied	Continuous creative development of the values, norms, roles and communications in the community	The research of brain and neuropsychology to find the biological basis of our creative powers	Creative use of the available outer material resources to solve problems
		MODEL USE based on situation oriented and rational applications of adopted models	Systematic way of applying learned and adopted models of WOV, ROV, REV, and SAV for planning and control of actions and activities	The use of the adopted linguistic, ethical, and interactional roles and models as patterns for exchanges	Sharpening the steering abilities of neuron nets by systematic and repetitive exercises	Variations of performances according to situational factors affecting the applications of the models
		MODEL ADAPTION and reflexes based on individuals' phylogenic and ontogenic histories	Development of WOV, ROV, REV, and SAV as results of interactions with communities	Adopting the language, values, norms and roles of the communities one has lived with	The development and maturation of the neurophysiological structures for tacit steering of actions	In the time-space dimensions manifesting elements of VOW, REV, ROV, and SAV models
Disturbed action repressing the reality	Disturbed Pathological	PROTECTION OF SELF IMAGE leading to.....	Intellectual dishonesty causing the use of faulty world, role, resource, and situation views	Negations, fibs etc. to save or achieve wanted role-image	No neurobiological abnormality necessarily as the cause	Belittling the importance of material factors to one's plans and actions
		DISTURBED action models	Repeated use of white lies leads to systematic use of disturbed action models	The role views of oneself and of the others become distorted	Possibly many distorted memory traces in brain's neuron nets causing difficulties of recall	Denying the necessity and importance of the material resources
		PATHOLOGICAL denial of reality, flight to dreams	The reality control in thinking totally disappeared	The Napoleons, Madonnas, and Jesuses in mental hospitals	Most likely pathological changes in neurones and neurotransmitters in synapses	Damaging and destroying material resources when not understanding their value for actions

Figure 4.2 The Main Areas and Levels of RA's Resources

4.1.2 RA's Resource-view and Its Functions

RA’s resource-view, REV in short, plays an important role in the formation of individual’s personality and identity. RA's view of his or her mental and material resources - their history, present state, and the hopes and plans of their future development - gives him/her the knowledge and feelings of the possibilities to act and control the happenings in different situations and different areas of life. In Figure 4.2 on page 101 is a schematic description of RA's main areas of his internal steering and outer material resources. The picture can of course not describe the enormous richness of our mental and physical resources but it should be seen as a preliminary outlining of this large issue. The preliminary draft of the resource-view is formed of factors on four areas and on two main parts:

The upper main part of the figure presents RA's mental steering and material execution resources aiming at the control of his actions. It is divided into three sublevels from reflex-like and model adoptions to model applications and model creations. The fourth level of steering resources is formed by our core self with its basic values, norms, rules, and principles. This fourth level will be briefly discussed also in section 4.3.4, but here it is seen as a resource, which is used when a decision needs a deeper acquaintance with the object and when so called 'sleeping over night' commonly happens in preparations of complicated and important, economical, political, and other decisions.

The lower part presents the area of resource types leading often into disturbed control in which, according to Freud (1904, 1998), the main aim is to repress the reality and its possible threats against one's personality. On its topmost sublevel, the control aims at the protection of the individual's self image. It may lead to many models of behaviour, which can be met in all people. The gradually deepening degree of disturbance in the mental control system can lead to uncontrolled actions and finally into fully pathological manifestations of behaviour only on the lowest repressing levels of the control of actions and activities. The severely disturbed and pathological levels may often have neurobiological causes.

The columns in figure 4.2 present the four areas of resources. The two first columns describe the mental resources and the two latter ones the bodily and outer material resources of an individual actor. The columns are briefly characterized as follows:

- RA's knowledge and his rational abilities to plan and make decisions can be seen as elements of RA's intellectual capital.

- RA’s roles in different communities and his communicative abilities can be seen as elements of RA's social capital.

- RA's anatomy and physiology, his central and peripheral nervous systems, and the collection of tacitly steered abilities to skilful performances can be seen as elements of RA's bodily capital.

- The outer material resources - necessary for the planned action - are formed of the possessed and/or controlled allotment of land, buildings, houses, cars, machines, tools, shares, deposits, money, etc. They can be purchased or borrowed from different suppliers in the technological, economical, political, and social environment.

These areas correspond with the main dimensions of RA’s actions discussed briefly in chapter 2. According to the presumptions of this study man is rational, social, and biological actor who also needs the material resources and their control systems on all these areas. Actions and acting were stated as the necessary preconditions for man's survival and well being. In all actions, one needs both material and mental resources. The resources one has in one's disposal and control defines one's options to act and achieve the valued goals. The hoped-for quantities and qualities of the material and mental resources are often the main motivators for the individuals’ attitudes, intentions, and actions. Resource-view is one of the tools of future planning for individuals as well as for organisations. Psychotherapists and psychiatrists are often working to reduce the gap between the experienced and the real resources of their clients and that way to improve their abilities to control their personal lives.

I am not going into more details of RA's resources here, because the control of resources are more connected with the main purposes of this study and they will be discussed in section 4.5. I just mention that besides the classification into material and mental areas our resources can also be classified by the degree of conscious and processual control. This division can be seen in most of our actions and activities while they are used as a means to achieve the valued and intended goals. The consecutive automaticity of our sensations and perceptions is an example of the processual control of our mental activities resulting in concept-based observation of the object of attention as mentioned above.

4.1.3 RA's Role-view and Its Functions

RA's role-view, ROV in short, is illustrated in figure 4.3 on page 104. It is a brief draft of what are the main items our roles usually cover. A role is a theoretical term referring to a theoretical entity postulated in social psychology. Role's only materially manifesting attribute is its name but its existence as a mental entity can be seen through its effects to our behaviour. In figure 4.3, I am using linguistic descriptions when filling in the descriptions of role's time-, value-, and theory-lines. RA's ROV is assumed to be a collection of RA's roles – achieved and/or given - in the different communities in which he has been or is living.

According to the postulations in social psychology, roles can be seen as formations of a variety of values and norms, rights and obligations, duties and liberties valid in the community in which individuals have been or are living. They are processed during the individuals' interactions with other members of communities. Roles are expected to guide the behaviour of the members of the communities that are giving or granting the roles to its members. RA's role-views are here assumed to consist of - besides the descriptions of the past and present situation - also descriptions of the hoped-for and valued future states of his roles, which are control his goal settings and actions in different social situations.

As social actors, we usually try to form our conceptions also of the roles of the other actors in the situations we are living through together with them. This is an important part of the social orientation to the situation. In business organisations, the learning and adopting of roles are often promoted by letting individuals compose their own job descriptions. This is done with all people or at least with people in leading positions. In modern team organisations, this process is intensified by group tasks in analysing the problems, planning options, setting goals, making decisions, and executing the activities needed to achieve the goals. Working through the process of one's own job description is often one of the first phases in the process of learning and adopting one's role in the organisation. One element of the individuals' personality development is formed through the 'fight' between the wanted and the given roles in different communities, (Lazarus 1982, Mischel 1981, Helkama & al 1998).

In many cases this 'fight' of roles happens unconsciously instead of being conscious and planned ways of conquering the wanted role. All interactions between individuals of communities involve elements of this role-play. Possibly people who have got the will to lead and manage other people do this in accordance with their consciously planned strategies and tactics. The value of leading roles in political life on all levels of communities is clearly

manifested through the election campaigns and the amounts of money used in them. The status and power connected with roles are evidently one of the main values and motivations for this fight of roles in organisations. An additional and possibly an unconscious incitement may sometimes be in the possibilities of gathering some corruption money moving around the political decision makers in councils, governments, and parliaments.

The Time-line	The Base- and Value-line	The Theory-line
FUTURE STATE Most roles have hoped for or desirable features, which are not yet fulfilled. They can be connected, for example, with a higher status of the job, or more independence, etc.	**VALUE & MEANING** An important role in a community can be a useful resource for its owner, it may give many rights. A wrong role can also be a great hindrance if causes discrimination	**FUNCTIONS** Roles direct individuals' behavior and actions according to the values, norms, and other role expectations of the community. Roles' steering effect is often clarified by written descriptions of its duties and rights.
PRESENT STATE The given role is often unsatisfactory for the individual and he usually makes conscious and unconscious efforts to improve it.	**ROLE** Role is a theoretical entity formed of its carrier's position in the net of social relations in a community. It is connected with a set of behaviour expectations from the others in community.	**STRUCTURE** Roles have in their structures the values, norms, language, behaviour expectations, and some outer signs of the position and status belonging in them
GENESIS Individuals build their roles in their communities based on the feedback they get from their actions and interactions they have with the other members of their communities. The roles one gets or acheives form a important part of individual's personality.	**OTHER ATTRIBUTES** Roles as any other entities may have endless collection of attributes. They can be classified into, e.g. mother's, father's, child's manager's, subordinates' or colleagues' roles.	**ONTOLOGY & SUBSTANCE** Roles, though, mental entities manifest in individual's behaviour. In business orgnisations role descriptions are used to explain the status, rights and responsibilities belonging to it.

Figure 4.3 The Main Structural Descriptions of RA's Role

4.1.4 RA as A Strategic Actor Using his Situation and Action View

RA's basic substance is here seen in RA's agency. The agency is the individual's ability to cope with the environment by planned and situation-relevant speech and other motor actions and performances, as mentioned earlier. The degree of rationality varies and is assumed to depend on the level of the individual's situation relevant descriptions of the world, roles, and

other resources available. The main area of rational mental operations is formed of the processes and conscious actions when the planning and decision-making concerning future actions are performed.

RA's strategic situations and actions view, SSAV in short, is assumed to be a situation relevant collection of descriptions of the previous three areas of subject's memory representations of world-view, role-view, and resource-view. Figure 4.4 on page 106 presents a chart of the elements of RA's situation and action view. I have used some modifications of this representation in my consulting practice as a model of strategic thinking and planning..

Figure 4.4 RA's Strategical and Operational Plans Based on the Situation and Action View, SSAV

The model of SSAV was originally built to describe the elements and phases of organisational planning. However, I see that its elements are present in every individual's action planning, though not clearly explicated. The planner with his SCES and views is thought to situate in the centre of the figure. We can imagine ourselves surveying the situation through our world-views, role-views, resource-views, and our situation and action views which all are easily obtainable from our long term memory. The elements of the situation and action view are

often descriptions that are called scripts in cognitive psychology. In social psychology, the term schema is often used (Helkama & al. 1998). The terms can vary but the referents of them are here seen as memory representation of situation relevant descriptions of the entities and their actions and reactions, which are influencing on the present state of affairs.

In organisations, the computer based information and knowledge systems are used as handy aids in forming the situation models. In spite of these modern tools, the mental SAVS are needed even when using computers in the processes of planning and decision-making. If the situation reminds us of some event we have lived through earlier, we can just select the proper situation and action view from the store of SAVS as the bases for our planning and actions. I am assuming that better parts of our experiencings are built on 'ready-to-use' situation models. The manifesting cues, sensed from the actual environment, recall the situation relevant models to explain the meanings of the sensed.

The SAV that is selected as the base for explanation consists of the situation relevant representations of subject's WOV, ROV, and REV. These are analysed by using SWOT-system thinking in which the actors Strengths, Weaknesses, Opportunities, and the Threats connected with the actual views are considered. The necessary information is assumed to be available in actor's memory representations or in different kinds of planning aids varying greatly depending on the planner's role in his community or organisational environment. The first four views lead to situation relevant planning and deciding of the goal or the goals for the action. The ordinary action planning also has four phases consisting of goal and goal oriented resource planning, the working plans for execution, and plans for control and feed back systems. All this is based on a thought of how the planned results should be divided between the interest groups and the individuals taking part in the operations. In new situations one often has to 'sleep over night' to solve all the problems, but a better part of our everyday actions and activities are performed by using the 'old good model' endowed with all the facilities we have stored in our conscious and/or tacit memories.

RA's view of the situation and action is an important type of RA's collections of concepts and conceptions. We can remember descriptions of singular entities, their different features, relations, systems, meanings, etc. However, we can remember also stories or descriptions of events, happenings, and programs; we have scripts and schemas of different occasions. They are descriptions of what was done, by whom, and what were the speculated motives of the actors (Baddeley 1997 244-255, Schank & Abelson 1977, Helkama & al. 1998). This type of memory representations serves RA in his situation orientation, which is here seen as one of

the main tools of control RA's actions and behaviour. Our SAV is often a ready and many times used model of our actions and behaviour in certain situations. I shall return to the issue of situation and action view in Chapter 7.

4.1.5 The Five Dimensional SCES in the centre of RA's steering system

The centre of RA's steering system is formed of SCES or the scene of experiencing and steering. In the next sections I shall describe and explain the postulated structures and functions of RA's SCES, which has fife main dimensions.

Formation of values and norms	steering	The growth areas of personality and the core self	Individual's principles of good life formed during one's ontogenic history				Experiences of the Napoleons and Jesuses in mental hospitals
			RA's basic values: knowledge, truth, freedom, equality and justice.	RA sees entities as good if they increase and/or protect his resources or those of his communities	RA strives to increase the conscious and creative part of directing his activities in accordance with his values	RA's successes and achievements are often the source of continuous energy and motivation	
Creating models	Conscious	Systemized use of the creative thinking Creating new concepts for problem solving Creating new solutions with adopted concepts	Imagining is a tool of creativity. It gives the possibility to find totally 'new' ways of seeing and solving the problems	By imagining one creates a new set of criteria for valuing the possible meanings or resource features of the object	Creative use of the life plan, and the views of the world, roles and resources is the way to make good decisions for advancing all the goal values of the individual.	Imagining is the tool to make the goal situation attractive enough to create and stimulate the goal-oriented mental power or motivation	Paranoid delusions of some mental patients
Applying models	or unconscious steering	Situation oriented application Direct application Automatic application	Perception and thinking are concept-based mental actions, where sensations act as search attributes bringing the relevant concepts to consciousness	Interpretation of the object's meaning is based on those attributes which describe the resource features of it	Action models or the know-how direct the choices and the performances of which a part can be refined to the automatic level	The mental power needed for actions is based on the valued goal situation. It is renewed by the experienced advancements toward the goal.	Misinterpretations like illusions
Processual/ reflexive	Processual	Reflex-like reactions Conditioned reactions Unconditioned reactions	Sensation is a primary and reflexive experience of idenfication of the object by sense-oriented description of it	Pure emotion is a reflex-like interpretation of object's meaning. Is it a threat or chance, good or bad. It causes joy or fear, pain or relief	No conscious choices or decisions are made. The reflexes and reactions are steered by the phylogenic structures of the nervous system	On this level experiences come after the reactions because the efferent actionpotentials are sent directly from the reflex arc	Pathological interpr. like hallucinations
Levels	Process/ consciousness	Subdiv. of the levels / Areas or qualities of experiencing	Identify, comprihend, create (cognitions)	Resource features as values and meanings (emotions)	Needs & wants choices & decisions (volitions)	Achievements and control (motivations)	Erroneous areas of experiencing and steering

Figure 4.5 RA's SCES or the Scene of Experiencing and Steering. Inputs = aaps, concepts, and views; Outputs = eaps -> actions and reactions.

I am assuming that all of them get their 'raw-material' from the structures of our memory representations and the recalled concepts and their different attributes. The five dimensions of experiencing of the SCES in figure 4.5 on page 105 are formed by:

- The five **areas** or qualities of experiencings from cognitive to emotional, volitive, motivational, and erroneous areas of experiences.

- The four **levels** of steering from the processual level to the level of model application and further from the model creation level to the formation of values, norms, and basic principles which happens on the level of the core self and personality.

- The **intensity** or the power of experiencing.

- The **duration** or the stay of the mood of experiencing.

- The division between the **conscious and the processual** in the experiencings and steering activities and processes.

The areas of experiencing form the columns or the first dimension of the scene of experiencing and steering as illustrated in figure 4.5 on page 105. The second dimension of the SCES is formed by the varying levels of steering presented on the rows of the figure. The third dimension of intensity or power of experiencing is not illustrated in the figure. The same concerns the fourth dimension of duration or time that the mood of mind stays. We all know that the grief work after the death of a close friend or a near relative may take years. In addition, sometimes we can experience just a brief flicker of happiness when remembering some events in the past.

The fifth dimension of SCES is figured by the diagonal borderline between the conscious and processual steering in figure 4.5. This fifth dimension shows the degree of consciousness, which is here thought to express the degree of concept based thinking, reasoning, and explaining in the planning and decision making operations when directing and monitoring the manifested actions and performances. The degree of consciousness is assumed to increase when ascending from the reflex level to the second level of model use, to the third level of model creation, and to the fourth level, on which the formations of the basic values, norms, and principles are taking place. The borderline shows that our unconditioned reflexes are totally processual but even on the level of forming the basic values and norms it is assumed that we are occasionally strongly steered by the processes of our mental world.

4.2 The Qualities or Areas of Experiencing

I am grouping the Qualities of the mental experiencing here by using the classical division into cognitive, emotional, and volitive experiencing. I have enlarged this trinity by adding the motivational and erroneous areas experiencing. Motivational experiencing has been seen

important in cognitive psychology and managerial research. The first three qualities of experiencing refer to the classical ones having been in use since Aristotle. Aristotle thought that knowing and understanding something requires the knowledge of its constitution and functions. The RA-model of concepts – figure 3.1 - consists of the time-, value-, and theory-lines as areas of its structure. Concepts' main functions are to make the sensed - or imagined - world and its changes understood. This is assumed to happen through enabling the processes of experiencing the meanings of the elements and the totality of the situations one is encountering.

What are the elements of the different qualities of experiencing? What are their constitutions and structures? In the RA-model of the human mind concepts, conceptions, and views are seen as atoms and molecules of the mental representations of the entities of the being. The qualities of experiencing are serving individual subjects by processing solutions to the following questions:

- What is the object of my attention in this situation I am presently going through?
- What is its meaning to me as a rule and especially in this situation?
- What are my options to act or react and how to select the good one?
- Why and for what reasons am I motivated to decide and act in a planned way?

In the next sections I am going to describe how these questions are processed and answered on the different levels of steering in RA's scene of experiencing and steering. We can ask also that are there any functions of our erroneous experiences.

The order in which the qualities of experiencing come up in our minds varies but in most cases the cognitive and emotional meaning interpretations begin the flow. They are followed with the volitive experiencing leading to a conclusion and choice of a situation relevant option of the possible actions or reactions. The targeting power of the motivational experiencing is strongly connected with the value and meaning experiences. Though the qualities of experiencing form a simultaneous totality I will briefly characterise the above named areas of experiencing and come back to them when presenting the levels of steering in section 4.3.

4.2.1 Cognitive Experiencing

The term cognition pertains to the mental processes of perception, memory, judgement, and reasoning, as contrasted with emotional, volitional, motivational and other conscious processes. The etymology of the term cognition is found from the Latin verbs cognoscere and gnoscere meaning to learn or to know. RA's cognitive experiencing is primarily aiming at identification of the object or objects selected by the attention process. The causal environmental input is assumed to be the sense encoded afferent action potentials, which are continuously feeding the short-lived sensory memories. As explained in Chapter 2, our attention process selects the situation relevant sensory memory and its flow of afferent action potentials to be first interpreted into the mental primitives or sensations. They in turn are assumed to function as search attributes, which then recall the interpreting concepts into our working memory for conscious review. We are aware of our sensations and become conscious of our perceptions. The purpose of perception-based cognition can be found, for example, in the answers to the following questions:

- What or who is the object of attention?
- Where is its spatial location compared with that of mine and the other important entities having an effect on the situation?
- What are its or their roles, aims, actions, and reactions?
- What are the meanings of it or them and its or their actions and reactions to the subject in the situation?

If we get the answers to these questions, we can much better understand the object or objects of our attention. The last question leads to the second or emotional and meaning qualities of experiencing. In a new and strange situation, the first conscious question is often the question of meaning. This means that the sensed is interpreted by the earlier experienced or by our concepts, which sounds quite understandable from the evolutionary point of view; those have survived who have been able to collect experiences and utilise them in new situations. This in fact refers implicitly to the old definition of intelligence according to which it is the ability to use one's 'knowledge base' to interpret the meanings of the objects of attention in new situations. This is also one of the reasons why man and most animals can be called as Rational Actors; they survive and have survived by using their experiences when interpreting the encountered.

As mentioned in chapter 2 the visual cognition with its phases of sensation and perception can be connected with the brain research by the results of Goodale & Millner (1998). In the RA-model, the ventral stream can be interpreted as the process in which a proper concept is connected to the sensory on-line information for the naming and recognising of the object. The dorsal stream is concerned with the on-line eye movements for the repeated checking glances or for the renewed sense-based primitives, which are needed in the perception process. The repetition cycles in Neisser's theory or perception can be understood by these two streams of visual information processing in our brain system (Neisser 1982).

4.2.2 Emotional Experiencing

The Latin etymology of emotion is based on the verb emovere, which is revealing its early referential meanings to set in motion, move, disturb, or move the feelings of the subject. According to a dictionary definition emotion can be seen as: "…an affective state of consciousness in which joy, sorrow, fear, hate, or the like, is experienced, and distinguished from cognitive and volitional states of consciousness". Secretions of certain endocrine glands often accompany emotions; they can cause physiological changes, increased heartbeat, respiration, and overt manifestations such as crying or shaking.

In connections with RA's scene of experiencing and steering emotion is a term used for referring to the area and quality of experiencing that is dealing with the values and meanings of the object of attention. The value attribute in entity's concept manifests the object's resource features to the subject as explained in chapter 3. Value attributes are thus assumed to be the elements that convey the emotional elements into the subjects SCES and consciousness. When individuals on the cognitive area of experiencing are striving to find answers to the questions who or what, the emotional process is seeking a solution to the problem of object's value and meaning to the subject at the actual situation one is living through.

The primary answer is assumed to be an emotional and reflex-like feeling of the objects quality and meaning experienced in dichotomies like good - bad, opportunity - threat, friend - enemy, prey - preyer, etc. These features of the object are stored in the value attributes of its concept. From the evolutionary point of view we can see the rationality of this kind of reflexive and emotional response: the decision of fleeing or staying must be done fast if you want to utilise the opportunities of the situation or avoid its threats. Those who have been able

to include in their memory representations of entities their resource features and the classifications of them have had greater probability to survive. Emotion can thus be seen as the mental steering energy and power that initiates the actions and reactions relevant to the situation as the Latin etymology explains.

Emotions in the RA-model of man can be seen as the first phase of valuing the meanings of entities encountered in different situations. The following phases are increasingly based on the cognitive descriptions of the object entities though even then the resource features have their central importance. This order of the phases of experiencings is natural because man is a Rational Actor and he always needs resources in his actions. For RA values and meanings of the entities of his environment are always based on the resource features of them as explained in chapter 3.

4.2.3 Volitive Experiencing

According to a dictionary, definition volition is the power of forming an intention or the incentive for using the will, or a choice or decision made by the will. Will and volition refer to a conscious choice and to deliberate action of thought. Will denotes fixed and persistent intent or purpose; "Where there's a will there's a way". In the RA-model the volitive process and conscious action is seeking answers to the questions of finding criteria for the decision making and choosing the actions and reaction to the events and changes in subject's environment. Volition is the third phase on the scene of experiencing and steering and it belongs to that totality in which the cognition and emotion have formed the ground. Volition, a want, a will, or a planned and measured decision is always an outcome of the main criteria chosen as models to be used in the actual situations. The advancement from volition to a systematic formation of decision criteria matrixes for different areas of decisions is one of the main challenges in the individual's personal growth plans and even in the processes of developing the managerial systems in organisations.

4.2.4 Motivational Experiencing

The discussion of motivation and its connections with needs, actions, and achievements has been one of the prevailing topics in psychology (Masslow 1943, 1954, and 1962; Alderfer

1972; McClelland 1985; Pinder 1998; Logie et al. 1998; Roe 1999). The three first areas of experiencing in RA's SCES-model can be seen as phases of RA's mental actions. They are needed to prepare and execute a proper reaction to the challenges in the encountered situation or its changes an individual is living through. In the RA-model of experiencing the fourth area or the motivational area of experiencing has the function of initiating, targeting, producing, and maintaining the **mental steering energy** needed for all these mental operations to process the situation relevant steering effects. They in turn are controlling the manifesting speech and other motor actions by processing a situation relevant flow of efferent action potentials for the purposes and goals of the acting individual.

The different qualities and areas of experiencing are in fact connected with each other, which is made understandable through the RA-model of SCES. They all have a base in the subject's concepts, which are conveying all the attributes built during the previous interactions and exchanges with them. All our concepts have their time lines, which include the hoped-for, wished, and possible future states of all those entities that are of importance to us. Motivation in the RA-model can thus be seen and the continuous or enduring want and will to achieve the valued state of affairs or situation in the future. The spontaneous want inspired by an object of attention may lead to a speech or motor action to carry through the idea of the wished results stored in the future states of our concepts time-lines. Our needs, wishes, wants, desires, lusts, intentions and motivations can be seen as mental energies which are provoked or tuned up by the values and meanings of the possible future state of affairs or situation or our relations to them.

The psychologists working on business advertising have long known this and so for instance, all the drinkers of a certain beverage are young, beautiful, and happy people. Similarly, all who use the same model of tennis racket, as the winner of Wimbledon or some other Grand Slam tournament, will be happy winners in their own games, sets, and matches. As maintained earlier our concepts with their different attributes are the by-products of our actions and interactions. Thus, the possible future states implemented into the subject's memory representations by repeated advertisements are forming an unconscious incentive to buy the product fulfilling the hopes. Often a better part of these implementations into our memory representations happens outside of our conscious thinking. On the consumer market, the brands and trademarks are regularly created by an impressive amount of repetitive advertising. The Romans knew that: "Repetitio est mater studiorum". According to the modern brain research, the receptor molecules in the synaptic clefs need repeated firings

before they are changed and formed as the basic elements of a new memory trace. This memory trace will then possibly function as a store and active element for the information they are processing (Kolb & Wihshaw 1996).

4.2.5 The Erroneous Qualities of Experiencing

Our everyday experience is that what we see and hear about our environment is usually correct and situation relevant or true descriptions of it. It means that the interpreting process our central nervous system is offering in our scene of experiencing and steering is performed in a truth preserving way. Thus, the emergent transformations of the sense encoded afferent action potentials into sensations, and to the mental states of perceiving and knowing create us a reliable base for our actions and interactions with our environment. This reliability of our mental processes is implicitly subsumed also when we believe in the theory of evolution. However, there are some types of experiences, which can lead to wrong decisions. The column 5 in Figure 4.5 presents some examples of the most typical cases of erroneous experiences.

An illusion is often seen as a false mental image, which is caused by the misinterpretation of the sense-based information of the attended entities. As explained earlier, our sensations act as search attributes recalling the situation relevant concepts into our working memory for conscious review. This recalling process may cause illusions. The cues in our sensations are often selected according our expectations and not according to the plain facts in the situation. The reality control by repeating the sense-based observations may sometimes become forgotten.

Hallucinations are perceptions of entities not existing in the material world. The green Martians and red elephants seen by an alcoholic are caused by some pathological changes in subject's central nervous system. The paranoiac delusions of some mental patients and the Napoleons in the mental hospitals are examples of the human creativeness without reality control.

4.3 The levels of experiencing and steering

The levels of steering form the second dimension of the scene of experiencing and steering. These levels are depicted in the figure 4.5. They vary from unconditioned reflexes on the

lowest level to different types of model applications on the second level. The third level is formed of different degrees of creative model structuring. The highest level of steering in this model is formed by the main factors and the growth areas of the individual's personality and the core self. This level consists of among other things of the individual's basic values and principles of life. In what follows, I shall briefly describe these levels of steering to give an idea of the totality of RA's SCES. Its detailed processing needs another research addressing the theory of action as its main issue. Here I am just drawing the frames of RA's steering system.

4.3.1 Processual or reflexive level of steering

On this lowest level, the steering is strongly process-like. It is divided in unconditional, and conditioned reflexes, and reflex-like reactions. On this level, the processual control of experiencing and steering is domineering. This variation of dominance between processual and conscious forms in the RA-model the third dimension of the scene of experiencing and steering and shown in the figure 4.5 As previously mentioned processual refers here to that part of the steering, which is controlled by the nervous structures individuals have acquired with their genome and during their ontogenic histories. This means that the phylogenic steering - as in reflexes - is strongly dominant though individuals' ontogenic history has had its effects. Even in today's environment we need the functions of the reflex-arch to save us from many accidents, like burning our fingers or falling when the stepping on a banana skin.

As mentioned earlier, on the cognitive area of experiencing our sensations are processually steered and reflex-like mental phenomena. Sensations are mental primitives interpreting our afferent action potentials and they are formed by the guidance of our peripheral and central nervous systems without conscious steering. Even the next phase of cognition or our perception is reflex-like interpretation of the sensed though using the situation relevant concepts as interpreters what the attended entity is. Through this step we become conscious or get a concept based explanation of the object of attention. We are conscious of the perceived but only aware of the sensed. We can name the perceived and understand its meanings in the situation we are living through, if we have a proper set of concepts and their attributes to explain the sensed.

On the area of emotional experiencing the reflex-level provides us with the very basic interpretation of the object of attention. This happens often with the help of the classifying attributes of the object in our concept of it. In our evolutionary history, the ability to fast state

the quality and meaning of the attended object was the method of surviving. The messages mediated by the remote senses - like visual, auditory, or olfactory information - had to be connected to the other features of the object. The decision of staying or fleeing had to be done fast. Even today's situations our emotional reactions are processed automatically; we become happy when suddenly meeting a good friend, we get frightened when meeting something unknown or threatening in our environment.

The volitions on the reflexive level are just reflexes as the name of the level describes. We do not plan and decide our responses they are steered by our phylogenic structures. Our motivational states are often connected with our volitions. Successes in our endeavours create motivational powers by processing the value attributes to the concepts of these actions as explained in Chapter 3. On the area of erroneous experiencing the mental state of hallucination is on the processual level of steering. It lacks totally the reality control by using the on line connections to ones material environment.

4.3.2 The Application Level of Steering

The second level of steering is called model application level consisting of three different grades, which can be described and explained in following ways:

Automatic model application refers to performances, which are based on our brain's ability to process a situation relevant flow of efferent action potentials to steer the needed motor actions. This level can be achieved by intensive, repeated, and long lasting exercises. Actions are performed on the lowest possible level of conscious steering. It can be seen and part of the rationality of our nervous system. We walk, swim, cycle, play tennis at the net, speak, etc. without knowing how the steering of the performing muscle groups and their co-ordination happens.

Direct application refers to performances in which the model can be used as such but conscious follow-up using the help of memory representations must be applied.

Situation oriented applications. When ascending the steps upwards the levels of steering, the processual elements of steering are decreasing and the conscious part increasing. This grade of conscious steering refers to performances in which the model must be modified according

to the grievances of the situation. There may occur some smaller problems, which must be solved, but no deeper creative processes are taken into use.

Skill, know-how, and tacit knowledge are terms in everyday language and psychology, which are used to refer to these phenomena of automatic or half-automatic steering of our speech and other motor performances.

4.3.3 The Model Creation level of steering

On the third level of the scene of experiencing and steering are situated man's creative activities. In the RA-model, I am using different grades of creativity. These grades can sometimes be found in practical discussions of creativity and its applications in organisations:

On its lowest grade of creativity the individual solves his problems by using his old or adopted concepts and conceptions of the entities connected to the problem in question. The individual's creativity is limited to the new composition of old structures and functions of entities and their memory representations.

The second grade of creativity is assumed to consist of forming conceptual tools new for handling the being and its entities. The real creative work begins on this level. It enables the individual to disengage from the old ways of thinking, from the old methods and rules, or getting rid of the entire paradigm or culture, one has been bound in ones previous history. On this level, the conscious part of steering is considerably higher than on the first level. The steering is concentrated on seeking or searching the solution or the possible options of solutions. Even in this level, the creative mental processes take their time.

The third grade of creativity could possibly be reached if one learns to systematise one's creative approach. This would mean also the systematising of the mental processes, and actions, which are needed when aiming at new solutions and trying to open new ways of thinking. There are hundreds of books teaching creative thinking and problem solving techniques. There are also increasing number of computer programmes aim at the advancement of the creative powers of the individuals and groups. The core seems to be to learn how to utilise the so-called incubation process, during which our brains are handling the problem and after which you may experience that a new comprehension and a new idea has been born in your mind. The processual outcome may bring in an intuition or an ah-ah-experience. As we see from the previous, so the processual is an important part even on the highest level of creative thinking.

4.3.4 The Core Self and the Growth Areas of RA's Personality

In the RA-model individuals' self, identity, and personality get their contents through their world-, resource-, role-, and situation- and action-views, of which one becomes conscious through the human ability to self-reflections. Individuals' resources and his roles are important elements for his identity. Similarly the earlier experiences collected as situation- and actions views form an important set of ready-to-use-models for actions in new situations

The fourth level of the scene of experiencing and steering is formed by the core self of the individual. It can also be described as the growth level of individual's identity and personality in which the basic values are present. One important group of criteria on this level consists of the principles, which individuals have adopted during their ontogenic histories and which they use as their guidance when planning and choosing their criteria-matrix for their decision-making activities. These are the items, which cause the need of sleeping over night before deciding.

Our scene of experiencing and steering is also the mental space where we live through besides our cognitive experiences also our emotional, volitive, and motivational experiences. In fact, the qualities and levels of experiencing are often mixed together and lived through as a totality without clear-cut borders. Man is said to be an emotionally orientating being. This means that many decisions are taken and actions performed more on the bases of emotions than on the bases of rationally considered and detailed knowledge. According to the RA-model of concepts, this is natural because there are no isolated memory representations for cognitive experiencing. The value and meaning attributes are also always with our concepts and so are the value evoked emotions parts in the primary moments in all of our cognitive experiencings. Thus, the emotional intelligence is our standard way of reacting to the events and changes in our environment as Daniel Goleman has described (Goleman 1996).

As mentioned above our emotions are often instantaneous or reflexlike expressions of the value and meaning experiences caused by the encountered entity and its manifesting behaviour. Emotions are evoked also when the object's behaviour diverge from our expectations which often are based on our basic values and principles which are forming our core self. One of the main areas of our individual development could be the conscious pondering of our basic values, norms, and principles according to which we are encountering the people and events in our environments.

4.4 The Other Dimensions of the SCES

4.4.1 The Varying Degrees of Conscious and Processual in Steering

The terms like conscious and unconscious are common in all texts concerning human sciences, psychology, and philosophy. I assume that the term unconscious often refers to those operations and processes, which are steered by the structures of our central nervous system. In figure 4.5, I am using the term processual instead of unconscious. The degree of conscious and processual in the process of steering is shown with a diagonal line on the left side of it. The line is indicating the assumed structure of the steering process of human actors; it is usually a combination of conscious and processual steering elements as explained earlier. The processual steering is here seen as a steering, which happens on the basis of phylogenic structures, formed during individual's ontogenic history and which is triggered into action by a proper set of environmental cues. The processual steering is in the main role in most of every-day performances. Tacit know-how-processes perform most of the routine-like activities. As mentioned earlier, better part of our speech and other motor actions are steered at least half-automatically. This automaticity is here seen just as a part of RA's rationality in man's mental structures and functions; the steering of decided performances will be completed on the lowest possible level and that way to free the intellectual capacity for monitoring and controlling the happenings and changes in the environment.

As I have mentioned earlier, we are aware of the sensed. Consciousness is here used as a term referring to that area of subjects' mental states, which are based on his concepts and their attributes explaining the different meanings of the object entity. We are then conscious about those entities of which the memory representations are present in our working memory for 'reviewing processes'. Of course, we are also conscious of our emotions, volitions, motivations, and even of our erroneous experiences.

The capacity of our working memory is limited and according to Saariluoma, the number of items is often limited to 4 instead of 7±2, as G. A. Miller's (1956) 'magical number' had suggested. In the above model of RA's steering system, there are four main items, of which he is assumed to be conscious at the same time. They are seen as the main situation factors - formed by the situation relevant worldview, role-view, resource-view, and the planned and

decided actions - which are actual at moment. RA's actions are aiming at a certain goal or end situation, which satisfies the values, norms, and principles one has adopted.

If we see the conscious as explained above, we could name the rest of the store of our memory representations as the metaconscious part of our memory resources. Somehow, we seem to be aware of what we know or about what we have reliable memory representations. The cues in the situation view are possibly recalling into our preconsciousness the situation relevant items of memory representations from our long-term memory. It is possibly justified to say that we are aware of those entities in our environment of which we are getting energy impulses to our senses and for our sensory memories. Our attention process selects then the situation relevant objects under sensation and perception processes, which are forming the concept-based and then more detailed and conscious descriptions of the attended objects.

4.4.2 The Power, Intensity, and Duration of Experiencing

As stated above the dimensions of power and duration of experiencing is not presented in the Figure 4.5. The time period of experiencing can vary from brief flicker of happiness when remembering some events in the past to a long lasting grief work and staying mood of mind after the death of a close friend or a near family member. Also the power or intensity of experiencing varies greatly from a gentle touch of a feather to the deep and racking pains of the last days of a patient of mortal cancer. Usually the power and stay of experiencing varies in accordance with the situation and actions the individuals are living through. The exceptionally long staying and negative moods of the mind are often connected with some disturbances of mental life, which need therapeutic treatments.

As mentioned earlier, the mental primitives as sensations and the ‘windows’ - opened into our memory reviewing – must have a certain minimum intensity and durability in time to be able to act as a search attribute. If these minimums fall short of these limits – as in subliminal sensations – their functioning as a search attribute is not possible, which explains why we do not become conscious of the object. The unconscious can then be seen as a term that refers either to the processual or to that part of our store of memory representations that we cannot recall into our working memory for concept-based and thus conscious and understood review.

I am assuming that it is possible to become conscious about those entities whose concepts are present in our working memory or in our minds. In ‘Taata’s – the Finnish Nobel laureate F. E.

Sillanpää's - Christmas stories in Finnish TV and Radio programmes …"and the images floated"..., which referred to the way he described his creative processes when writing his novels. Thoughts are there recalled by other thoughts not only sensations describing the outer environment. Sillanpää's views remind somehow the picture theory of the meaning of sentences of the early Wittgenstein (Wittgenstein 1970, Hintikka 1981).

The intensity of experiencing can vary greatly both in bodily and mental areas of causes and reasons. The threshold values present the minimum end and the pain spot is nearing the maximum end. It is difficult to compare the degrees of intensity in the cases when you are burning your skin and when your sole 'burns' when you boil over or you blow your top for some reason. One element of aggressive behaviour is often formed by the excited intensity of emotional reactions.

4.4.3 The Centrality of The Situation Orientation in RA's steering system.

Situation is a term, which is used both in everyday language and in philosophers' talks. All managers' speeches begin with a review of the market and competition situation. In a cocktail-party, when moving from a group to another, we keenly listen to catch the items discussed and then the situation for own input. Some philosophers have used the term situation referring to an entity whose ontology is often left without exact explication. Lauri Rauhala - following and developing the long tradition of phenomenological philosophy of Brentano, Husserl, Heidegger, and Sartre - has used situation as one dimension of his three dimensional ontology in his existental phenomenology (Rauhala 1989, 1990, 1993). The two other dimensions of his ontology are tajunnallisuus = consciousness and kehollisuus = corporality. Rauhala's situation refers to that part of the world or reality to which an individual is or becomes in different kinds of relations (Rauhala 1993 p.70).

In the RA-model situation orientation is man's basic mental state, which is processually formed of the actual sensory informations and their concept-based interpretations. As mentioned above RA is assumed to be a situation oriented being. RA's situation orientation is a function of the recalled and situation relevant elements of world-, role-, resource-, and situation and action views as presented in figure 4.4. Situation orientation means also that the subject is goal and value oriented or 'intentional' and has motivation that aims at the accomplishment of the action necessary in that situation. RA's actions and activities have always a purpose that the individual actions and their elements serve. Situation orientation is

part of our phylogenic and ontogenic rationality. In the familiar situations we have all the necessary mental tools at 'hand' in the situation and action view, which is recalled by the sensed cues.

The attention and perception processes seem to be goal and situation oriented. The value-and goal-orientation in our situation-views determines what is important. Those, who have been able to observe the situationally relevant entities and factors in their environment, have survived in the evolutionary processes. The situation interpretation defines what the actor sees as a rational way of acting and then also what are the needed resources. Thus the resource features of entities are functions of the varying situations and their interpretations by acting subjects. So also, the values of entities are often functions of situations. At war operations the enemies - soldiers or civilians - are no more a human beings with global human rights but just enemies that can and must be killed otherwise you will be killed yourself, by them.

RA's situation orientation can be understood by remembering the structure of RA's concepts; they all have an attribute, which is describing the hoped-for and often also planned future state of entities. Our situation views have also the future attribute describing the probable or hoped-for result-phase of the situation.

4.5 A Brief Summary of the RA-model described in the Previous

Chapters 2, 3, and 4 form the theoretical basis for a new conception of man as a mentally steered rational actor. Man as a rational actor is created by the physical, chemical, biological, and cultural phases of the evolutionary processes. As an individual he is a product of his phylogenic and ontogenic histories. Man's mental life and actions are enabled by his brain's **emergent transformations**. Through these ontological transformations the sense encoded afferent action potentials are interpreted into our experiences. Our materially manifesting speech and other motor actions are enabled by our brain's **steering effect**, which transforms our thoughts and decisions into a situation relevant flow of efferent action potentials to steer their manifesting performances. The transformations between the material and mental and vice-versa have been and are still somewhat unexplained processes. These processes have created a continuous situation in which man has, during all his history, needed different kinds of gods, devils, good and bad daemons or spirits, and miracles caused by supernatural forces to explain the experienced and its relations with the outer and inner reality.

As explained earlier, in the RA-model of man, the human mental is explained by using our memory representations and their situation relevant interpretations as the testable and real basis for the phenomenal we experience. The memory representations of the entities of the being are stored in our long-term memories. **Concepts** as situation relevant sets of them or their attributes can be recalled into our working memory for conscious review to explain the sensed on-line information of our environment. We are meta-conscious about the content of our long-term memory, though we do not always succeed to recall all the items we know to know. Concepts are our mental tools, with which we can interpret the sensed and also all the products of our creative imaginations. In what follows is a short list of the main elements of RA-model of man:

- Man's **concepts** are situation relevantly recalled sets of attributes of the memory representations of the objects of attention. Their function is to explain the meanings of sensed - and even imagined - objects of attention.

- RA's steering system, which serves his planning, decision-making, and control, forms a metaphorically delineated model of the human **mind**. Its mental space is in our working memory, whose content we can be conscious.

- RA's **views** of the world, of his roles, resources, situations, and actions form the frames of his steering system. Views are memory representations of entities in individual's long-term memory and are used to build the identity and personality of the individual.

- The centre of RA's steering system is formed by RA's scene of experiencing and steering or **SCES** in which individuals are living through their cognitive, emotional, volitive, motivational, and even erroneous experiences and steering their actions and reaction on different levels of steering.

- The **levels of steering** vary from the reflex-like to model use, model creating, and to the level of formation of the personal values and principles and their dynamics.

- RA strives always to be **situation oriented** in his actions. This means that the concepts, conceptions, and views - recalled into his working memory - are selected to serve the tasks relevant in that situation from which the recalling sense-based primitives and cues are processed.

- Thus, one element of RA's basic substance is his situation relevant **goal and value orientation**, which often is referred by the term intentionality in philosophical literature.

In Chapters 2, 3, and 4 I have built the tools to handle the problems and the hypothesis of this study. They are connected with the core items of managerial psychology and philosophy implicit in my four intuitive definitions in Chapter 1. These tools are built on the results of human sciences and on the postulations of the system models of RA's concepts and RA's steering system. The most challenging task was caused by the intuitive definition of knowledge and its dimensions connecting it to the other psychlogical concepts of motivation, organisational culture, etc. In the managerial environment also the problems around motivation, values, norms, and language as elements of organisational culture are of great importance. They all seem to be intertwined with RA's concepts and the ways RA uses his steering system when planning, deciding, and accomplishing his actions. In the next Chapter I shall discuss the possibilities of the RA-model to advance the psychological understanding of man as a human individual and an object of managerial operations in an organisation pondering the problems of information, knowledge, motivation, language, and other mental dimensions of organisational culture.

5 RA'S CONCEPTS, MIND, AND THE FOUR DEFINITIONS

Motto of Chapter 5:

If we could understand the emergent genesis of the human mental from its material background enabled by the system effects of our central nervous structures, we might possibly discover what are the cognitive-, emotional-, volitive-, motivational-, and other areas, qualities, and dimensions of human experiences, of which the human mind is created.

5.1 The RA-Model and the Mental of Man

In the previous chapters I have built the RA-model of Man with the system models of man's concepts and mind. I have left the problems of how the two transformations are performed by our 110 billion neurons and their system effects to the future brain researchers and used the results and postulations of the cognitive memory research. Can the RA-model of man with its 'universal' system models of human concepts and human mind provide us with a simple and plausible - though metaphorical - set of descriptions and explanations of man's mental structures and functions? Can the postulated theoretical entities, describing the universal features of the human mental, explain, and give us a deeper understanding of those mental entities, which are implicated in the four intuitive and hypothetical definitions of action, knowledge, motivation, and organisational culture, which I presented in the introduction of this study in Chapter 1?

5.2 The RA-model and the Psychological Theory of Knowledge

5.2.1 Knowledge as an Area of the Mental States of Experiencing

The postulations in Chapters 2, 3, and 4 justifies us to assume that subject's knowledge is concept-based mental state of experiencing the situation relevant meanings of the entities of the objects of attention. Thus, knowledge can function as a mental tool to direct individual's conscious decisions and actions in a situation oriented way. I am going to use the system model of human concepts as a tool to analyse the substance, origin, structure, and functions of human knowledge with its different dimensions. This is a way to formulate a concept of

knowledge and a **psychological theory of knowledge,** which I am depicting in Figure 5.1 on page 128. As I assumed in Chapter 3, the system model of human memory representations and concepts with their time-, value-, and theory-lines offers a multipurpose tool to build concepts and thus also natural theories of any material or theoretical entity; knowledge is one of the central theoretical terms whose referent has been discussed since Plato. Its genesis, substance, structure, and functions should be understood if we want to understand the substance or the material and mental dimensions of human beings.

As stated above, the everyman's conceptions of entities differ from the scientist's conception of them mostly in the quality of the attributes in general and especially those on the theory-line of memory representations and concepts. The attributes describing entity's substance is often totally lacking or filled with magical or traditional beliefs and explanations. The attributes of structures and functions are often limited to the materially manifesting features. Thus, individuals' common conceptions of theoretical entities such as knowledge, language, motivation, value, culture, etc., vary largely. The fact is that theoretical entities lack the direct and materially manifesting attributes besides their names and possible short linguistic definitions using other already known concepts. There hasn't been any possibility to use ostensive definitions, thus the situations in which they are used has formed the meanings of them. The use defines the meanings of terms, as Wittgenstein argued. This has led to the situation, in which one has had a philosophical freedom but an empirical difficulty to define the origin, contents, substance, structure and functions of the entities, to which the theoretical terms refer. Different kinds of metaphors have been and are used to compensate the lacking material features of theoretical entities.

In the intuitive definition on knowledge in Chapter 1 I stated that:

'Knowledge is a description and explanation of an entity of the being documented by concepts and/or signs.'

This definition tried to incorporate the problematic and seemingly dualistic substance of knowledge as materially manifesting linguistic expressions and the mental, concept-based experiencing of it. This dualism appears in our everyday linguistic practice in which information and knowledge are used as synonyms. Compared with the Plato's definition, according which 'knowledge is a justified and true belief', the above definition lacks the normative features but explicates the mental substance of knowledge. It is maintaining that knowledge is a description of an entity, which is based on mentally subsisting concepts or

materially manifesting signs and information. Concepts in turn are assumed to be built of the recalled set of attributes of our mental memory representations of the object of attention. This definition accepts also materially manifesting information - built of different types of signs, sign-systems, and linguistic expressions - as knowledge.

Basing on the postulations in Chapters 2, 3 and 4 we can state that man is steered or directed by his causally effective mental states. They, in turn, are often caused by the sensory or thought information and its concept-based interpretations. The end-result of this is the mental state of knowing. I am suggesting that knowledge is seen as subject's mental state, which enables us to define knowledge as follows:

Knowledge is subject's mental state of understanding the meanings of the sensed, thought, or imagined object of attention with the help of the recalled and situation relevant set of concepts and their attributes.

Time-line	Base- and Value-line	Theory-line
FUTURE STATE Present state of knowledge aims at explaining and understanding by using the descriptions in our concepts. The future state of the object is created by beliefs or educated forecasts of the future events. This enables our planning	**VALUE** The value of knowledge depends on its relevance to the situations subject is, or will be, living through. Thus the value of knowledge is a function of its resource features as seen from the planning and control point of view of RA's actions	**FUNCTIONS** The function of knowledge is to offer reality-tested descriptions, explanations, and forecasts of the objects of attention and of their changes to serve the subject as reliable base for plans and actions.
PRESENT STATE Knowledge is a dynamic process, in which the conscious perceiving of the situation is related to the experienced past and anticipated future. The relevance of it is tested by comparing the sensed with the remembered as the dorsal and ventral-streams of vision exemplify	**KNOWLEDGE** is concept-based mental state of experiencing the cognitive- and value-meanings of the recalled collection of descriptions of the object of attention including all of its situation-relevant qualities, relations, actions, and reactions as its resource features	**STRUCTURE** Knowledge is formed by a set of recalled concepts, conceptions, and views having relevance in the situation subject is living through. Its elements are depicting the object's different qualities and resourse features suchd as the subject is used to interpret them
GENESIS Knowledge, as a mental state of experiencing the concept-based explanations and meanings of the sensed, remembered, or imagined object of attention, is created by our brain's emergent processes using the cues in our sensations, thoughts, or imaginations	**Classifying & other attributes** The quality of knowledge is often classified by the criteria of truth, justification, or situation-relevancy, as is done in this study. Each entity can have endless sets of attributes of which only a certain set is relevant in a given situation.	**SUBSTANCE** The RA-model suggests that a clear distinction is needed between information and knowledge. Information is - in form set material or energy - as the text here. Knowledge is experienced descriptions of the being to which the information refers and as such it is a SUBSISTING entity with varying degrees of intersubjetivity.

Figure 5.1 The System Structure of RA's Knowledge

The lacking normativity in the above definition is mended by the situation relevancy of the recalled and explaining concepts. As will be shown in Chapter 6 - when discussing the problems of truth - the referents of both these terms, truth and justification, are problematic. Situation relevancy is used as a normative expression instead of Plato's true and justified. In fact, we should discuss about the **degree of situation relevancy** of the recalled concepts, because it depends on the attention activating cues in the sensed or thought elements of the situation we are living through. As explained earlier, RA's conscious mental states take place in his scene of experiencing and steering or SCES. Its mental space is assumed to locate in subject's working memory. All our mental states are creations of our brains' emergent transformations, whose truth preserving features are not exactly known. However, their situation relevancy must be assumed if we believe on evolutionary processes. The dorsal - or other on-line - stream of sensory information offers a conscious and reality controlling review of the situation relevancy of the recalled descriptions, explanations, and meanings of the attended object entities. The on-line sensory information of the object of attention and its interpretation offer predominantly a functioning reality control of the experienced. At least, it is situation relevant, and possibly also true, as we all and most of the realists, empiricists, and pragmatists usually believe.

Here the subject's mental state is based on the meanings of the attended entities mediated by the recalled concepts and their attributes. These usually create situation relevant interpretations of the attended object entity. The **concept-basednes** is enabled by our brains' ability to use the sensations, thoughts, and imaginations as search attributes, which recall the situation relevant attributes of subject's memory representations of the object of attention to explain its situation relevant meanings. As explained earlier, the sensed can be any sensory feature of the object entity as well as any linguistic expression, which is commonly used to refer to it. Similarly also imagined entities can function as search attributes, which initiate the concept-based abstracting or goal oriented mental actions.

The attended object entity can then be a sensed entity or by inductive, deductive, or imaginative powers thought, created, or planned entity. This remark is important, because it shows that the initiative **source** leading to the mental state of knowing or knowledge can be, besides our senses, also our rational, fact based, or imagery thought or other mental and creative imagining processes. All the technical equipments of human life from stone axes and spears to electric shavers, atomic power plants, and airplanes are first designed and born in the human brains by the powers of imagining, creative thinking, and planning.

The above definition dismisses signs and thus also information as knowledge and maintains that only **the experienced or mentally interpreted information** can be used as a conscious tool to plan and decide over our actions. It also expands the explication of belief to involve also the relations of the object entity with its mental and material environment. As mentioned earlier, I see information as **'in form set material or energy'**, which is manifesting as sets or flows of conventional signs or symbols belonging to some commonly used system of signs or symbols. Thus, written or spoken words and sentences or their digitalized electronic packages on hard disks, knowledge bases, and in the extra-, intra- or internets etc. are just information. Thus, words, sentences, and other linguistic expressions as forms of information, can refer to their referential objects only through the concept-based interpretation process in the receiver's brain system.

Even the memory-traces on the receptor molecule structures of the synaptic clefs and their systems in our neuronal nets are just information. To make use of this information one needs a complicated system-summation and interpretation process in the neuronal nets of our central nervous system to form a set of experienced and understood descriptions of the object of attention. **Only the interpreted and understood information leads to the mental state of knowing or knowledge**. Concepts and knowledge are used in our thinking and decision-making operations and then they function as conscious tools in our mental processes of steering our actions. How this last sentence can be defended will be seen in what follows. I shall use the system model of RA's concepts when examining the time-, value-, and theory-lines of the concept of knowledge by describing RA's mental state of knowing in the next sections.

5.2.3 The Time-line of RA's Concept of Knowledge.

Knowledge, as the mental state of knowing, is always an intentional or goal oriented mental state. Knowledge is mostly about something, about some entity, which has become as an object of interest selected by our attention process. The time line of our concepts – the left column in Figure 5.1 - explains the **genesis** and history of the mental state of knowing the object of knowledge, its sensed present state, and its planned or hoped for future states, which are in accordance with our values and norms. The mental state of knowing is caused by the recalled attributes of the concept of the object of attention. **Attention** is assumed to be a mental process that is able to select the object oriented and situation relevant items from

subject's **sensory memories**. They, in turn, are continuously available to be developed into mental primitives or sensations and then into concept based experiences of the selected set of objects of attention.

Thus, knowledge gets its **genesis** or birth by the recalled concepts and their attributes. The attention process - enabled by the sensory memory and steered by subject's goal orientation - focuses the sensation process to the situation relevant object. The materially manifesting cues can be, for example, a spoken or written word or sentence, whose memory representations in subject's situation relevant concepts function as search attribute causing their recalling into subject's working memory for conscious review. As explained in Chapter 3 and 4 any material feature of the object entity can act as a **sign** and its memory representation as a search attribute recalling the proper concept to interpret the sensed object of attention and its meanings. Thus, both semantics and semiotics as research areas need the human memory representations and RA's concepts to build natural explanations to their theories of meaning.

The **present state** of knowing is a result of how the flow of the on-line sensory information and the recalled concepts are processed in our scene of experiencing and steering or SCES. Its mental space is situated in our working memory. The quality, level, intensity, and duration of the state of knowing depends on the meanings of the object entity. The meanings are mediated primarily by the recalled value and other attributes of the recalled concept or concepts. In the mental state of knowing, we usually have many situation relevant attributes active in our working memory of the object of knowledge. Thus, there are also many areas of experiencing activated. This is depending on the relevant factors and recalled attributes in the situation one is living through. Besides recognising the object, the subject is influenced by the value attributes creating the emotional reactions and later volitional and motivational reactions toward the object of attention, as explained in Chapter 4. In the everyday routine situations the main emphasis of attention is - or can be - aimed at the cognitive, fact-based, meanings of object entity, although the emotional features are always on the scene. We usually rely upon our repeatable on-line sensory connections to our environment as the base of the true knowledge of the object of attention.

In case the object of attention is something totally new for the subject he has to make trials to classify it and if it doesn't succeed extra efforts are needed to create new concept from the available sensory features and other information of it. Thus, to **conceptualise** an observed or thought theoretical entity means to name it and collect information to state its substance, structure, functions, its genesis, present state and possible future besides the sensory

descriptions of it. Very often we have at the beginning to satisfy just to some preliminary classifying features of the new and unknown objects we confront.

The mental state of knowing - though it is always lived through at the present time - consists of the descriptions of the historical and the **future states** of the object of attention. We usually plan or improvise the future states in line with our values, norms, and our beliefs of how to accomplish the hoped state of affairs. Thus, human mental state of knowing usually consists of the whole time-spectrum from history to future. This seems to serve our need to understand the world by enabling the mental state of experiencing at a glance of the whole time line with its individual entities. The descriptions of the possible future states of entities serve often our security needs and play a decisive role in the formation of our motivations. The goal orientation or intentionality of humans - and other actors - seems to be based on the future features of the time-line of our concepts.

The processual formation of the state of knowing through the consecutive processes of sensory memory, attention, sensation, and perception has possibly made it so difficult to have a mutually understood discussion about knowledge and its real substance. Philosophers have left these processes behind the common understanding of the term **belief**. The same concerns also the memory-based mental substance of concepts as I have explained through the analysis of its postulated system structure in Chapter 3. The brain-based processual genesis of knowledge in human mind can be followed through the results of neuropsychology and brain research. As neuropsychology has shown, our awareness of the entities of the outer material world is based on the energy impulses our senses receive and encode from them. They cause momentary sensory stimuli and detection activities in our brains. They are experienced as short flashes in our sensory memories like in the iconic and the echoic memories (Neisser 1967, Baddeley 1997, Uusitalo 1997, Näätänen 1998). Our attention process – possibly steered by our situation relevant goal orientation - then selects a situation relevant set of impulses and creates the state of conscious follow-up of those objects, which are important to review in the situation one is living through. From the evolutionary point of view, the attention process can be seen as a necessary feature of actors' central nervous system; only those individuals whose perception system could concentrate on the situation relevant objects in the environment could find food and shed and avoid enemies and other threats.

As explained in Chapter 2, the results of brain research and neuropsychology show, the mental state caused by the visual information is a result of the interpretations of the dorsal and

ventral streams our brain's visual system is processing from the encoded electromagnetic or photon inputs to our eyes:

- The 'direct' or the sense-based, **dorsal** stream after the primary processing of afferent action potentials encoded by our eyes, is seen as an **on-line description** of the visual features of the objects of our attention (Ungerleider & Mishkin 1982, Goodale & Millner 1995, Kolb & Whishaw 1996, Haffenden & Goodale 1998). They can be material objects in our environment or words and sentences in a book we are reading. They all can act as signs or symbols, whose memory representations can act as search-attributes initiating the other stream of information from our long-term memory.

- The other or the **ventral** stream of information – initiated by the sensed signs - is recalling the situation relevant set of concepts and their attributes from our long-term memory into our working memory for conscious review so we can recognise, name, and value the meanings of the object of our attention. As explained earlier this process of perception is leading the subject into the dynamic state of knowing, in which the situation and its goal setting determines the recalled and associated concepts and their attributes to explain the detailed meanings of entities present in the situation. These attributes outline the conscious mental content of subject's working memory or active mind. They form the basis when one is trying to understand to what kind of an entity the object of attention is.

Thus, as I have assumed earlier, we are **pre-aware** about the items whose energy emitting is bombarding our senses and causing the momentary sensory memories. They could be named as the mental pre-primitives, because they form the selection frame for our attention process and then the beginning of our sensations or the first experienced descriptions of the outer world. Thus, the sensory memories are assumed to form the inputs for our attention processes, which, in turn, enable us to form sensation and become **aware** – German gewahr = watchful – about our environment and its changes. We become **pre-aware** about the items, which are selected by our attention process for formation of sensations. We are aware of our sensations. As explained earlier our sensations or our mental primitives and mental atoms act as search attributes and cause the state of **conscious perception** by the help of the recalled concepts. They enable the naming of the object as well as understanding its different meanings. In these processes, in handling the visual information, both the ventral and dorsal streams are used for creating the state of concept-based perception and conscious reviewing of the object entity and its meanings.

Thus, the **genesis** of knowledge of our outer - or inner - world begins with the processes of sensory memories, attention, sensation, and perception and achieves the state of knowing as the end-result of this chain of brain processes. In neuropsychology, these processes can be described just as a follow-up of the movements of afferent action potentials to the phase in which they get into the corresponding areas of our brain system causing changes of the level and intensity of their activities. However, the experiencing human being must report the mental. Thus, the long denied introspection, as a source of scientific information, is the only way to study the human mental.

If we see **consciousness** as a mental state in which we can observe and understand our environment and the situation relevant objects and their different features, we are very near the description of the **mental state of knowing**. Thus, we could define consciousness as a mental state in which our experiences are concept-based instead of being just sensed. Consciousness is then identical with 'concept-basedness' in our processes of experiencing. We become conscious of the object of attention first at the perception phase as the end-result of the above-explained chain of processes. Our ability of conscious experiencing is depending on our brain's emergent abilities. Sciences do not yet have any detailed explanation of this transformation. We just know that it happens and we understand that it is a necessary condition of our survival. How it happens is a challenging problem also for future brain research and neuropsychology.

This emergent transformation from material afferent action potentials into mental conscious experiencing may get its scientific explanation at some time in the future. At this state of scientific research, it seems useful and justified to philosophize and postulate the two mental theoretical entities of concepts and steering system with its SCES to offer a metaphorical description and explanation of tools and phases of this unexplained transformation from the material into the mental and vice versa. Are these transformations truth-preserving is an epistemological problem. As said earlier, these processes must produce at least situation relevant descriptions of the object of attention; otherwise humans and the actors had not created and not survived in the evolutionary processes.

The above described perception process leads the subject into the mental state of knowing, which corresponds with the present state on the time-line of the concept of knowledge. In this state the dorsal - on line - connection of sensations offers the **reality control** to the subject who has the ventral stream's memory or concept-based explanation of the sensed in his working memory. It is difficult to think how humans and other acting species had survived

without this kind combination of the on-line and memory-based connections to their environments. All learning is, in fact, depending on this combination of our brains' on-line and memory-line mental operations. The mirror-neurons seem to offer a natural explanation of how we learn by aping our situation relevant linguistic expressions, speech acts, and other motor actions (Skoyles 2002).

How is the **future state** of an entity's time-line created? As we know from our everyday experience, we are planning or imagining the future states of our lives and binding them with the dates in our calendars. We seem to process the future states of all of important persons and things in our nearest environment and of certain global affairs of interest. This future orientation is necessary in present day and it has been one of the necessary conditions of the survival of our ancestors. In the evolutionary processes, those individuals and communities, which have had the functioning ability to learn from the past episodes of life and who have been able to forecast what will happen in the future, have had the greatest possibilities to survive.

The human time orientation is possibly based on this phylogenically processed history-present-future structure or the time-line of our concepts. If this is true, the understanding of this basic and substantial feature of man's mental structure can possibly solve the problem of the ontology of time. The experienced time seems to be our mental creation, that serves us to adopt to the processes of our planetary and solar systems with their annually, monthly, and daily appearing changes. The material or the physical and organic worlds do evidently not have time as an experienced phenomenon. They seem to have only structure-based processes, which are caused by some internal or interactional forces and which seem to follow quite regular frequencies or repeating intervals, as do the cycles of the quarts-crystal in my wristwatch maintained by the electric energy from its battery.

These mental processes can be reviewed through RA's SCES, which has its different levels of consciousness and steering. As has been explained earlier, sensations are seen as the reflex-level of our cognition during which we become aware or pre-conscious of the object of attention. Perceptions take place on the second level where the concepts act as interpreters and models, which are then used automatically to form a concept-based explanation of the object entity of our attention. The second level contains also the situation models of most usual everyday activities and then they form often the foundations of the mental state of knowing.

We could say that our perception processes lead us in the mental state of knowing; knowing is thus that mental state in which one can name the object or objects of attention and recall many of their situation relevant features, meanings, and relations to other entities in the actual situation. The mental state of knowing is caused by the recalled attributes of the situation relevant concepts and then there always are also the other qualities of experiencing present in our conscious mind. The value-attributes are defining the resource-based meanings of the entity and then the emotional, volitive, and motivational features of experiencing are often also present.

5.2.4 The Base- and Value-line of Knowledge and its Value Attributes

The English terms such as concept, comprehend and knowledge, have the Latin word 'concipere' 'capere', and 'comprehendere' which can be translated approximately as 'catch or grasp mentally together'. We can infer that our mental state of knowing is enabling the understanding and control of the world and its changes. They are some of the main functions of our concepts and knowledge. The need of understanding leads to the need to know the causes, reasons, or motives of the observed changes, actions, or processes. As explained earlier, the value and meaning attributes of the objects of attention define the dynamics or our perception processes. As assumed in Chapter 3 the value attributes of our concepts describe the resource features of the object of attention. They define the value-based meanings of the object entities. The qualities of the mental states are then mainly defined by the functions of the value attributes.

Thus, I am assuming that the quality or the area of the experiencing of a concept-based interpretation of the sensed information depends on the value and meaning attributes connected with the object of attention and the object of knowledge in our minds. On RA's SCES, there are always a whole spectrum of qualities, levels, intensities, and durations of cognitive, emotional, volitive and motivational experiences. The recalled concepts and their situation relevant attributes in subject's working memory are triggering the areas and levels of experiencing on the SCES. The focus of the mental state achieved can vary between cognitive, emotional, volitive and motivational and depends on the situation. In normal familiar and controlled situations, one can concentrate on the cognitive features. However, cognition is always mediated through concepts, and so it is always connected with the values and meanings connected with the object and its relations to other entities in subject's

environment. Knowledge is then always a multidimensional mental state whose steering power depends significantly on the value and meaning attributes of the attended objects.

In the RA-model, emotions are connected with the values of entities. Values in turn were assumed to be associated with the value attributes expressing the resource features of the cognised objects of attention. As briefly explained earlier, our emotions can be seen as reflexive responses to the value and meaning attributes of the object of attention. For example, fear is an emotional and reflex-level response to a threat. Joy is a response to a positive emotion connected with the opportunities and resources connected with the object of attention. From the evolutionary point of view the reflex-like classification and response in interpreting the sensed object has been an important positive factor for actors' survival and well being. Even the motivational features the object, are functions of the value attributes of it, as will be explained later. Goleman's book of Emotional Intelligence offers many good descriptions of this kind of totality of our experiencing processes of which RA's SCES is built (Goleman 1996).

5.2.5 The Truth and Value of Knowledge

The main value of knowledge depends on its relevance with the situation subject is living through. A true and reliable knowledge enables us to make working and effective plans and decisions for our actual and future actions. Here again we see that RA as an actor values entities according to their resource features. Only those mental states of knowing, which are based on reliable information carry the real value attributes and are then useful. Individuals' self-image and identity may largely depend on their personal knowledge base or the intellectual capital they have been able to acquire. The classifying attributes of ones knowledge base are formed by the feedbacks one gets through the successes of his actions. They act as a summation of the **truthlikeness** and/or relevance of individual's situation-, world-, role-, resource-, and action-views. That's why it seems to be so important to be right in ones opinions, thoughts, and theories.

As mentioned earlier, there is not any commonly accepted theory of truth. For example, the situation relevancy of the visual information achieved by the sense encoded afferent action potentials and interpreted by our dorsal and ventral streams of our brains, seems to be the most reliable description of our actual environments we can get. As stated earlier, the efferent and afferent action potentials form the only material interface to our environment. The

emergent and steering transformations form the necessary and the only mental interfaces to our environment. They form the connection with which the humans and assumedly all other actors have survived. However, we cannot directly compare the outer world and the descriptions our central nervous system offers us of it, because we have only our brain's interpretations in our conscious use. As stated earlier, if we believe on the evolutionary theory, we have to believe that the on-line sensory information of our environment offers a reliable source of knowledge of it. Naturally it presumes that the recalled interpreting concepts are properly tested ones to enable a true description of the object of attention. In Chapter 6 I shall present the concept of truth describing it by using the system structure of concepts in the RA-model.

One important function of the value attributes is the classification of the entities into good and bad things, opportunities and threats, friends and enemies, etc. This classification initiates also the emotional reflexes enabling a fast assessment of the meaning of the situation and preparing the relevant response and action to cope with the encountered. As mentioned earlier this has been a crucial ability in the course of our evolutionary processes.

Though, our everyday experience of perception and results of relying on them have processed rules covering the happenings in certain repeating situations. They have taught us to believe in the information we perceive through our senses, in spite of some exceptions of the rule. Layman's position seems to remind the tradition of an empiricist who believes on the repeated proof as a source of true knowledge. Individuals' ability to control themselves, their environments, and the relations with them depends largely on their intellectual capital collected during their ontogenic histories and stored as their knowledge base in their long-term memories. The market-prise of individuals in the knowledge-society depends, as well, on the same factors. They seem to be formed of the quality and quantity of mental capacity, in which the ability to learn and adopt new information and transform it into working knowledge-capital has a central meaning.

5.2.6 The Theory Line of RA's Knowledge

The third line in figure 5.1 consists of the three squares representing the substance, structure, and functions of knowledge. The contents of them all have already been elaborated above. The mental and subjective nature of knowledge, its conceptual structure, and its functions as the main mental tool has been the core in all other descriptions of this theoretical entity. The

descriptions of the time-, value-, and theory-lines of the concept of knowledge have, in fact, revealed the contents of the squares of the theory-line of knowledge. These features are briefly explicated in the psychological definition of knowledge above and in the centre square of figure 5.1. When discussing about theoretical entities, we usually are satisfied with brief definitions, which are describing just the main classifying features of the entity.

The definition of knowledge that Plato gave has survived two and half millennia in philosophers' discussions and minds. For most of them knowledge seems still to be: 'a true and justified belief'. My contribution to this discussion is here confined mostly to the substance, genesis, value, meaning, structure, and functions of the entity to which the term belief, in Plato's definition, is possibly referring. However, I have made some remarks on the normative features of the human knowledge by mentioning the necessity of the situation relevancy of the mental descriptions we experience as interpretations of the afferent action potentials our senses are encoding of the object of our attention. The **truthlikeness** of the experienced depends totally on the truth-preserving features of the transformation processes of our brains and the reliability of the information our senses receive from our environment and its changes. If we believe on the theory of evolution, we have to believe that the interpreting processes produce and offer us - in most cases - situation relevant descriptions and explanations of our environment, of its present state and probable future changes.

5.2.7 The Tacit and Explicit Dimensions of RA's Mental State of Knowing

Human knowledge is here seen as a mental state of experiencing the different features of the object of attention. It is combined of the processes of concept based manipulating of memory representations of the object. Thus, knowledge is as a multi-level, multidimensional, and situation oriented, dynamic and varying mix of cognitive, emotional, volitive, and motivational areas of experiences. They are caused by the recalled concepts of material or mental entities and their situation relevant attributes. How are these dimensions connected with the knowledge classifications into explicit - tacit, declarative – procedural, know-that - know-how dimensions of knowledge (Niiniluoto 1988, Baddeley 1997, Nonaka & al 1995, Lillrank 1997 and Lilrank & al. 1998)?

As explained earlier all qualities of RA's knowledge get their manifestations through speech or other motor actions. They in turn are steered by a situation relevant flow of efferent action potentials our brain system is producing. Thus, these flows steering our explicit or declarative

knowledge are manifested as spoken or written linguistic expressions aiming at communicative interactions with the others in the situation.

In our everyday language, we speak about knowledge when we have to formulate spoken or written answers to questions what, where, when, and why. The answers can be given or declared in an explicit way by describing what, where, when, and why something happened. In fact, we are using the recalled and situation relevant memory representations or concepts as basis for our report. Then, we are using our explicit or declarative knowledge, which in the RA-model of knowledge is formed of the concept based descriptions and explanations of the object of attention. The linguistic expressions are - as explained earlier - part of the sensory attributes of any concept and memory representation of an entity.

The question, how, concerns often the tools, methods, and ways a certain task is performed. We often believe that the terms skill and know-how are referring to that unexplained entity we are seeking when we are speaking about one's ability to act in a proper way or to use a certain method on a production line. In the RA-model, all our manifesting performances are steered partly by conscious and partly by processual steering-system as explained in chapter 4. Thus, the skill and know-how refer to our brain's ability to process, store, and deliver a situation relevant flows of efferent action potentials to steer the manifestation of the wanted sequence of speech or other motor performances. This ability can be achieved by repeated exercises.

As mentioned in Chapter 2, this ability is possibly based on the functions of our brain's mirror-neurons, which enable us to 'ape' the performances of others, teachers, or trainers who may have difficulties to verbalise the shown. This simple 'behaviour model-imitating-system' forms better part of this type of organisational tacit knowledge. In the RA-model tacit knowledge can be explained if we remember that all of our concepts are processually formed; they gather situation related descriptions and also the used linguistic expressions as a ready to use set of mental tools. The situation relevant linguistic expressions may be found from the situation related memory representations and the tacit knowledge could then get also its explisit manifestations.

In verbal manifestations, we use our concepts and their linguistic interfaces manifested through words, sentences, mimics, intonations etc. When we use our tacit knowledge base, the search attributes and cues are often built in the situations in which the skilled performances are needed. It is easier to show, how, for example, a backhand over-twisted shot with a tennis racket is correctly completed than to try to put the method in words and sentences describing

the execution of the coordinated racket, hand, and body motions and their timing, which are needed, for its proper performance.

We learn tennis by imitating the instructor or guide. We learn also our language just by imitating our parents' and others' situation relevant speech actions beginning already at age of 11-13 months when the pronouncing of the first words is learned. The human ability to imitate both linguistic and other observed actions is the way we acquire the know-how of most of our speech and other motor actions. We learn the meanings of words by the automatic processes in which the memory representations of words are connected as name attributes to the concepts of entities and views of situations with which they have been used.

Analogically, I am assuming, that we learn the meanings of sentences by living repeatedly through situations in which the sentences are used. The sentences and their varying forms are then processed as search attributes of the related situation views in our memory representations of them. Thus, I am assuming that our **language of thought** - if one wants to use this Fodor's and other linguistics' expression - is built into our situation and action views, which consist of a set of useable sentences as linguistic tools for situation relevant and creative ways to express and describe what is happening. Sentences can function also as search attributes recalling into subjects working memory a position relevant situation and action view explaining of the actual roles of persons and other factors and their meanings in the present situation. In the RA-model our words and special terms refer to entities but our sentences refer to situations, actions, interactions, changes, processes, etc. The mental means for referring are in both cases our natural and testable memory representations or our situation relevant concept types and structures. Propositional attitudes are then situation relevant linguistic expressions, which express individual's beliefs, hopes, wishes, etc. They are linguistic attributes of the recalled situation- and action-view describing its elements and happening.

The **know-how** resources form part of our tacit or procedural knowledge that is often difficult to verbalise. Our cerebellum seems to be involved in the forming, storing, and using these resources of our know-how (Kolb & Whishaw 1996). Similarly, all our automatized speech and other motor actions seem to be steered partly by the system effects of the neurone nets in our cerebellum though their content and meanings, which are steered by our cortex and our concept-based knowledge and experiencing.

Through the RA-model, tacit knowledge can now be seen as brain's ability to form a repertoire of sets or flows of efferent action potentials ready for use when the outer situation requires a certain type of action or set of activities. All of our automatized actions such as speaking, walking, running, swimming, cycling, repetitive work on production lines, etc. are examples our tacit knowledge (Miller 1956, Vartiainen 1987). Tennis player's reflex-like actions at the net in doubles are examples of one type of tacit knowledge, in which the situation factors and opponent's movements are triggering the sets of afferent action potentials to steer the reflex-like performances. Even our speech actions are steered at least semi-automatically. One can ask also that, what is the degree of automaticity and what is the role of creative artistic interpretation in the performances of top artists with violin or piano and circus virtuosi?

What are the systems our cerebellum uses in storing the learned abilities and automatized performances, which are aroused and attuned with the needs of the actual situation one is living through, is a problem of future brain research. It is quite probable that those results will create many changes in our conceptions of man and his mental states of knowing.

5.2.8 Situation Orientation of Knowing in the RA-model.

As stated above, subject’s mental state of knowing is created by the concepts, which are recalled into subject's working memory for conscious reviewing. Our brains seem to serve us quite rationally by recalling only the minimum amount of attributes, which are related with the situation and the goal setting of the subject. For the great majority of the entities, we encounter in our everyday situations, we need only the fast recalled classifying or stereotyping attributes. This depends on the fact that the detailed descriptions are not needed until with the real and practical interactions, actions, and exchanges with the encountered individual entities or the singular particulars. This may explain why Vygotsky, Piaget, Baddeley, etc. have seen concepts in their research work just as a set of classifying attributes.

The processes of classifying and stereotyping may be seen as mental laziness, but it can be seen also as our brain's natural rationality not to burden the limited capacity of our working memory with items not necessary in the situation. As a result, we are context- and situation bound in our understanding of things. As I maintained in Chapter 4, our SCES in figure 4.5, illustrates the dynamic and varying ratio between the concept-based and the processual in all of our mental operations.

As assumed above, even certain parts of our rationality, can be explained by these processual features of our mental actions. Our situation orientation is based on the situation view that is recalled into our working memory by the cues in the actual environment. Situation views form thus the frames for further mental operations of thinking and problem solving, which are possibly needed in the situation. Situational views are kind of maps how to interpret the sensed and how to behave and act. The automaticity of this situation orientation can also be seen as part of our processual rationality, which, of course, can carry certain risks and lead to misinterpretations. Illusions are examples of these misinterpretations. Sometimes the recalled attributes are not all we should have needed in a certain situation as we can afterwards discover and criticize ourselves by pondering that why did I not remember those details of the case, though I very well knew and know them. Aren't we sometimes accusing ourselves and also our friends having acted against our or their 'better' knowledge?

5.3 The Resource Attributes of Entities and the Human Values

5.3.1 The Time-line of Values

In the previous chapters, I have maintained that the dimensions of our mental states - varying from cognitive to emotional, volitional and motivational - are strongly connected with the value attributes of entities in our concepts of them. Similarly, our values, goal-orientation, and many of our needs are depending on them. In chapter 4, I explained that all dimensions of our experiencings are based on the conceptual structures, which are recalled into our working memory for conscious review. Value-attributes were assumed to describe the resource features of the recalled object entity. Rational actors seem to value only entities and things, which have actual or potential use in some of his actual or prospective actions now or some time in the future. In what follows, I shall briefly repeat the explanation of the value thinking I applied in Chapter 3. I am going to illustrate the theoretical entity of value by using the system model of concepts, which was developed in Chapter 3 and which is presented in Figure 5.2 on page 143. Values, seen as resource and meaning features of entities, can be described as the other theoretical entities by answering the questions in the eight squares on the time-, value-, and theory-lines of the RA-model of concepts.

On the time-line of the concept of value, we can see that values - or the value attributes of entities - are formed processually as side-products of individuals' interactions and exchanges

with the object entities. The majority of the values of entities are then dynamic and situation related entities and they change along with the experienced changes in the value bearing entity and its behaviour. We can remember the resource features of entities and perceive their meanings on the situations we are living through with them. Thus, we can compare if the observed corresponds with the remembered. However, it is possible that we have to call into question or even totally change our earlier conceptions of the object entity.

Time-line	Base- and Value-line	Theory-line
FUTURE STATE The future values of an entity are connected with the believed or hoped for resourse features to be owned by the entity at certain time in the future.	**VALUE & MEANING** The meaning of value as an attribute of entities' concepts is in its ability to trigger a reflex-like emotional and cognitive classifying of the object entity into good or bad, opportunity or threat, etc. and lead to situation relevant actions.	**FUNCTIONS** Individual's values serve him by guiding him in goal orientation while norms direct the ways and methods of executing the actions, planned and decided along with values. Values trigger and upphold our moods, attitudes, motivations and other mental states.
PRESENT STATE The present values of an entity are formed by those resouce features which are useful in the current situation. The experienced values are then dynamic and situation-related entities.	**VALUE** RA's values are those attributes of an entity's concept which describe objects' ability to be or act as a resource or anti-resource factor in subject's or his communities' actual or potential actions now or in the future	**STRUCTURE** The value attributes of entities describe those features of them which have been useful in some of subjects' actions in the past. Values are then functions of actions and metabolic processes in which different types of resources are needed and valued
GENESIS Individuals' values, seen as the resource attributes of entities, are formed as by-products of individuals' interactions and exchanges with them. Entities having positive resource features will be the valued ones	**CLASSIFYING attributes** Even the human basic values and principles such as UN's declaration of human and childrens rights, the Ten Commands of The Bible, the freedom, brotherhood, and equality of the French Revolution, justice, honesty, and democracy, etc., can be seen as resources for the members of a society relying on these principles.	**ONTOLOGICAL STATUS** Values have material carriers but are themselves subjective mental entities. However there is certain degree of intersubjectivity in values of people living in the same community and using the same resources.

Figure 5.2 The Concept and Theory of Value.

The future values of entities are based on its speculated resource features in the future. The prevailing situation – when it is experienced as a drawback, harm, or inconvenience – initiates a creative process of finding something better. RA seems to have the need and capacity to imagine what the future resource features of an object entity could and should be. Thus, the state of affairs - as they are now - causes the planning process aiming at something, which suits better to subject's values, norms, needs, and hopes connected with the future. All the 'revolutions' and other changes in human conditions – I assume – have attained their executing physical and the steering mental energy or motivation from this basic human ability to imagine a better functioning and more satisfying state of affairs in the future. Even G.E.

Moore's 'autonomous moral faculty' and the ideas of connections between individual's values and emotions, could get their explanation through the value attributes and their postulated time-line structure in RA's concepts. In Chapter 6, I shall briefly return to some problems of ethics and moral seen through the RA-model.

5.2.2 The Base-and Value-line of Values

The base-line of values consists of three squares. In the middle is the definition of value as an attribute or a set of attributes in RA's concepts describing the resource features of the object entity. As mentioned earlier, RA's resource needs are situation dependent and thus the activated attributes vary as function of situations. The territory fights of animals, mafia-groups, and business companies, and nations have a common explanation in the resources of the area in question.

In the upper square is an explanation of the value and meaning of values. The resource or anti-resource features of entities enable individuals to define quickly the meanings of the entity and to classify them. In the evolutionary process, the ability to immediately classify objects into friends and enemies, edibles and inedibles, threats and possibilities has been a necessary condition for survival. Besides, the value attributes are able to initiate the emotional processes steering the areas of experiencing and the functions of endocrinal glands causing changes in the blood chemistry – for example, the concentration of adrenaline - and thus enhancing individual's ability to encounter the challenges of the situation. Our brain’s limbic system with its thalamus, hypothalamus, pituitary gland, hippocampus, and amygdala are in important roles when the value attributes of entities are arousing emotional experiences and corporal reactions.

In the lower square of the base-and value-line of the concept of value are the collections of entities classified by using the value attributes of them. These are formed as by-products during the earlier encounters with these entities. Values and value attributes serve thus individuals by classifying the objects in accordance with their resource features on different areas of actions and processes, interactions and exchanges. This process of classifying entities can serve subjects on his individual and social, metabolic and mental, sexual and intellectual, religious and ethical areas of life and activities.

5.3.3 The Theory-line of Values

In the theory-line of values, I maintain that values are subjective as all features of our memory representations and concepts. However, certain - sometimes quite high - degree of intersubjetivity may appear among individuals living in the same communities and using the same resources. Thus, intersubjetivity is a function of similarities in individuals' living environments, actions, interactions, and exchanges. As explained earlier our common concepts are mostly by-products of common operations and experiences between members of social groups and communities.

The structure of value concept varies from a single value attribute to a large and situation relevant set of attributes describing the objects resource features. A religious person may have his God or Gods and their value as a Redeemer, a Rescuer, a Holy Spirit, or a Saviour. Even in these profound areas of mental actions, the resource features are important and explicated by the names of the object of worship.

Many humans seem to be also religious actors with values and needs, which are fulfilled by the resources the divine object of worship offers. These divine powers evidently subsist as resource attributes in the concepts of their Gods. The steering power of these theoretical entities can be seen in the religious rites and in the innumerable wars, which Gods' will have justified and executed by armies blessed by the priests serving the same Gods. Millions of human lives and thousands of billions worth of material losses have been sacrificed on the shrines and altars of these theoretical entities called with various names in different cultures. A doubting Thomas or a sceptic might say that the real reasons for wars have always been the resources the invaders has been aiming at and Gods has been used just as means of hiding the real motives. Anyway, the steering causal power of theoretical entities seems to be astonishing high and easy to be distributed among masses of people. The RA-model seems to give a natural explanation also to these functions of our values. All the leaders and other manipulators of masses have used them through the known history.

5.4 Motivation as the Mental Steering Energy

5.4.1 The Base- and Value-line of Motivation

In what follows, I am using the system description of concepts to examine the content of motivation. The time-, value-, and theory-lines of motivation in Figure 5.3 on this page give a condensed account of the content of my concept of motivation. The base-and value-line of the concept of motivation is made up of three squares containing the value, the definition, and the classifying accounts of the motivational states of human mind. In the previous sections, I have briefly examined the value concept in the RA-model and maintained that values of entities materialize in their resource features seen from the subject's point of view.

Values are then subjective and situation related features of entities, though intersubjetivity occur between members of communities using the same resources. I am assuming that values form also the source of our motivations. In the upper square of the base-and value-line I have stated that the two main values of human motivation or the motivational state of a rational actor are formed of its intrinsic and its instrumental values. The previous refers to the positive mental state that is experienced when being motivated. The latter is here interpreted as the mental steering energy, which is needed to initiate and accomplish the activities to achieve the decided goal state of affairs. Motivation is then as a processual mental force or tool created by the evolutionary processes to stimulate the actors into effective pursuit of valued goals needed for survival and well being.

In my intuitive definition of motivation in Chapter 1 I described as follows:

Motivation is a goal oriented mental energy that is sufficient to lead to the results the subject is aiming at.

In this definition the term motivation is substituted by another theoretical entity the mental steering energy. The energy of an entity is its ability to act or work. Here, it is referring to an energized mental state, which is needed to initiate and accomplish a set of activities leading to the aimed goal. According Newton's laws, we can assume that in all actions and changes one needs energy to form the powers needed in them. In all human and goal oriented and then mentally planned and decided actions one needs both the mental steering energy and physical muscular energy.

Though we do not know what steering energy is, we all have experienced the feelings we have when being motivated. The steering energy needed in an action grows or gets its **genesis** from the value features of the planned goal state of affairs. The level of the experienced energized mental state is affected by factors such as: the individual's personality, his attitudes and needs, the action or work itself and its different features, and - of course - the working environment the management practice included (Maslow 1985; Peltonen & al. 1987).

The Time-Line	The Base-and Value-line	The Theory-Line
FUTURE STATE The fulfilled needs and achieved goals lose their motivational power but all actors are goal-oriented most of their awake-time. Thus the motivational state is one of the continuous dimensions of humans' concept-based mental states.	**VALUE & MEANING** Motivation has both an intrinsic value as a positive mental state and an instrumental value by creating and upholding the steering energy needed to achieve the valued goal state of affairs	**FUNCTIONS** The evolutionary 'purpose' of motivation is to create and maintain the mental energy needed to steer or to plan and control and give continuity, power, and joy for subjects' mental and physical activities and life
PRESENT STATE The quality, direction, and intensity of one's motivational state depends on the experienced necessity or needs to acquire or achieve the valued entity, role, or other end-state of affairs under one's attention	**MOTIVATION** Is one quality of the concept-based mental states, in which one experiences an object-oriented energizing, which is sufficient to bring about an action leading to the valued goal state of affairs	**STRUCTURE** Motivation is a multifaceted mental state having: 1. Object and direction, 2. Quality of experiencing 3. Intensity or power 4. Continuity or duration
GENESIS The experienced motivational state is often initiated by the needs of resources for metabolic or mental processes or actions. Thus it is based on the value attributes which express the situation-relevant resource features of object entities	**CLASSIFYING** Motivational states can be classified by their direction into stimulating achievements or inhibitory avoidance motivations, by their intensity and duration into lasting and powerful or short-lived and weak, and by their cause into physiological or intellectual, etc.	**SUBSTANCE** Motivation is a mental state, which is experienced directly only by the subject as an energising power based on the value attributes of the goal state of the action leading there. It manifests indirectly through subject's actions and reactions

Figure 5.3 The Main Structural Attributes of RA's Motivational State

The main impact to the experienced motivational state is - in this meta-model of motivation – seen in the individually experienced value of the goal state of affaires and the belief that it is possible to achieve by reasonable use of mental and material efforts. The psychology guiding the planning of commercials has used this fact by describing the wonderful end states of affaires one can achieve by using the advertised product.

The postulated theoretical entities in Chapters 3 and 4 enable the redefinition of motivation. I am assuming that motivation is one of the dimensions of human knowledge or of the mental state of knowing. I am assuming that this motivational feature of individual's mental state is caused mainly by the value attributes of the object or objects of attention. The definition of motivation as a dimension of human knowledge can now be reformulated as follows:

Motivation is an experienced and object oriented mental energy, which is caused and maintained by the value attributes of the possible and wanted goal state of affairs, which is attainable by a set of situation relevant actions.

This can be interpreted in the way that motivation is that dimension of the multifaceted state of knowing in which the experiencer must:

- be an actor who is able to know, imagine, plan, and decide about a valued goal situation
- have the needed resources and methods of their utilisation to achieve the wanted end result
- have an energising experience, which has a proper level of actuality, intensity, and duration to initiate and fulfil the operations needed for the action
- believe on the possibility of achieving the wanted goal situation.

I am building this hypothetical description of motivation on the features of concept-based state of knowing that I have briefly presented above. The value attributes are assumed to describe the resource features of the object entity. Human motivation seems to be connected with the actions, which are aiming at gathering, maintaining, or safeguarding the resources, which are needed for the actual state of well being or its advancement towards the valued goal level. The resources of which individuals seem to be worried can be his or those of his family or other important communities to which he/she belongs as a member. As explained above human beings seem to be situation and resource-oriented, because resources form always the indispensable prerequisites of all actions. The preferential order of things seems to be defined by the quality and quantity of the resource features of the object entity. Thus, the motivational power correlates with these features and the probability of their accessibility (Helkama & al. 1998).

In the lowest square of the value- and base-line of motivation is some classifying and qualifying comments of human motivational states. One possibility to classify motivation is to

base it on the needs behind it. According the RA-model needs are based on the lacking resources of our material or mental processes or actions. As seen above, RA is biological, social, and rational actor and his needs and motivations can be classified on these three areas. The Aristotelian view of man's substance as a social and rational animal and Alderfer's (1972) classes of human needs fall into the same categories with the RA's action areas, as will be seen in the next section. We are motivated to keep up our existence by experiencing the needs evoked by the lack of balance of our metabolistic processes. Analogically we seem to be motivated to achieve a balance on social exchange with the individuals in our communities.

As rational beings, we are continuously aiming at advancing the intellectual or conceptual as well as the material control and power over our environment and its changes. This motivates us to gather information of it and to find ways to utilize it. When trying to comprehend the origin and purpose of Man and our Universe, one is possibly motivated by scientific curiosity and the intellectual need to a new and better explanations to these eternal problems.

Another way to classify human motivation is review them through ethical and moral values and norms. Aren't we just selfish and envious when demanding freedom to act, fraternity from other citizens, and equality from our communities and our society. In the previous section, our values seemed to be just the resource features of entities. These features were seen from our and our communities' actual or future actions' point of view. The politicians are often accused of being unjust and partial instead of aiming at results, which serve all citizens equally. The questionable motives of the members of the resent Olympic Committee were recently pop items in Internet and other news arenas on the eve of the Olympic games in Sydney, Australia, in September 2000.

5.4.2 The Theory-line of Motivation

On the theory line of motivation in Figure 5.3 on page 146 are brief characterizations of the substance, structure, and functions of the mental state of motivation. These states are subjective ones, though intensively cooperating members of groups and communities can experience 'similar' states of motivation. Mass hysteria, panic, and horror are examples of a simultaneous and somehow primitive interpretation of the meaning of some happening in the environment of a group or crowd. The behaviour of one or some individuals of the group is transmitted fast to all members of the group or crowd. Save yourself if you can! A chaotic escape reaction can be fatal for many individuals as has been seen in many cases of panics.

Thus, the **substance** of motivational energy is individually experienced need, want, and power to achieve a certain and valued goal state of affairs.

The **structure** of motivation has at least four mental dimensions:

- intellectual orientation toward an object of attention
- emotionally qualified orientation toward the object, which can be valued, feared, or unspecified of its nature
- intensity or power of the emotion and desire toward or from the object
- duration of the mental state aroused by the values of the object.

These structures create the steering effect on individual's manifesting behaviour. Motivation is thus kind of a time and intensity bound mental **vector variable** transforming individual's mental energy for activities, which are aiming at a valued goal state of affairs. The intensity and duration of motivation are important factors, because without a proper degree of them the action will never be commenced and never completed.

The functions of motivation, as has been expressed above many times, is to provide individuals with the mental steering energy, which is intensive and enduring enough to accomplish the planned actions. The mental state of being motivated has its own intrinsic value as a positive energizing experience as mentioned above. Our quality of life is strongly affected by this mental state. Without valued and motivating goals, we may loose the purpose and meaning of our activities and with them the significance of the whole life. If so, a proper state of goal orientation and motivation is a necessary condition for a purposeful human life.

5.4.3 The Time-line of Motivation and Human Needs

Motivation can then be seen as a mental state in which one has a reason or an incentive to perform a certain task or duty, which is assumed to lead to the valued goal state of affairs. In figure 5.3 is the content of the concept of motivation analysed by using the common system model of concepts developed in Chapter 3. Following the order on the time-line we can see that the mental state of motivation gets its genesis through the observed or imagined value attributes of the object entity. It is often experienced as a need to achieve a valued state, role, or situation in the future. This happens when one is 'moving' on his SCES and directs his

attention on those characteristics of the object entity, which are carrying the real or speculated resource features of it. The present state of motivation and its duration in the future depends on the continuous 'freshness' of these features. In practice, this 'freshness' needs actual and positive feedbacks from the entity, which carries these features. The feedbacks use the different on-line sensational-streams exemplified by the on-line dorsal-stream in handling the visual information.

The mental state of motivation can be taken as an object of self-reflection. Then the classes and qualities of the experienced can possibly be analysed and the backgrounds of them found. Our motivations are mostly based on our needs, which often arise from the homeostatic imbalance on the metabolic or mental area of processes. The topmost criteria for classification of motivation are based on the core items of one's personality. They consist of entities such as the basic values, norms, and principles according which one is orientating towards the world and its changes and happenings.

Motivation theories are often built on some grouping of human needs. Maslow (1954) has a six-level system of motivation. He named the levels of needs as physiological-, security and safety-, love and feelings of belonging-, competence & prestige & and esteem-, self-fulfillment-, curiosity and the need to understand. Alderfer's three areas of needs are existence, relatedness, and growth (Alderfer 1972). McClelland (1985) has four motive systems in his theory of motivation. He grouped them into achievement-, power-, affiliate-, and avoidance motives. Kaila (1952) maintained that man is a condensation of thousands of needs. He grouped them into animal and spiritual classes of needs. In the former belong species-typical needs of food and sexual partner and in the later, for example, the aesthetic and religious needs.

In psychology and in management literature needs are often grouped or classified on certain areas as mentioned above. Often the groups fit with the Aristotelian view of man as a rational and social animal. In RA-model, man is seen as rational, social, and biological actor created by the evolutionary processes. According to the RA-model, needs can be seen and defined by man’s basic essence as an actor. In any action, resources are essential and crucial elements and, if they are lacking, needs arise as a feeling of missing means. Using the RA-model as background and as a meta-model, needs can be defined as follows:

Need is an experienced lack of resources or their use caused be the metabolic or mental processes or by the execution phase of a planned physical or mental action.

The experiencing of needs can then concern an actual or a presumed future lack of resources of some of the planned actions or processes. Thus, needs are experienced through an emotional kind of feeling of a state of imbalance between existing resources and suspected resources which are needed to maintain the homeostasis of our metabolic processes. The other balance we are aiming at is our personal conception of the balance of communicative interactions and material exchanges in the situations we are living through with the other members of our communities.

This definition of needs opens new criteria for understanding human needs and human behaviour, which is mainly based on them. Many of our basic needs grow from the biological processes, which are steered by the biological homeostasis. Homeostasis is usually understood as the maintenance of metabolic equilibrium. The same phenomenon can analogically be found also on the mental area of actions as a need for equilibrium of exchanges and interactions between individuals in social groups. This homeostasis of social exchange can easily be understood by the structure of human concepts. Human beings are processually and often fully unconsciously storing their experiences of interactions and mental and material exchanges as attributes in their concepts and views of the lived situations. The actions, interactions, and roles of the participants of the situation are stored and used when a similar or analogous situation occurs. The need for mental balance of social homeostasis in its extremity can be seen, for example, in the vendetta and feud traditions in some cultures.

If we see needs as experienced lack of resources, so Kaila's view of needs seems to be correct. Man as an actor needs resources for his actions. Actions in turn are situation oriented planning, decision making, and implementing the use of proper resources to achieve the valued goal. In the RA-model, needs are then dynamic and situation related experiences of the lack of resources, be the resources material or mental of their nature. It is easy to see the connections between needs and motivations; they both are often aroused through the resource features of the valued and achievable state of affairs in the future.

5.5 RA's Concepts and the Mental Foundations of Language

5.5.1 The Linguistic Attributes on Concepts' Base- and Value-line

In Figure 5.4 is a system description of the concept of human language. I shall use its time-, value-, and theory-lines to briefly review the basics ideas concerning the RA-model of our linguistic abilities. The basic idea of the RA-model is that the main part of the human mental is based on the on-line sensory connection with our actual environment and on the recalled elements of the explaining memory representations. Our sensory 'touch' with the linguistic expressions in our environment connects us to situation relevant concepts and through them to the meanings of them. In the RA-model linguistic expressions are stored as names or descriptions of the object entity in their memory representations. Thus they can function as any other material feature of the entity and recall the situation relevant concepts to explain the sensed.

According to Ferdinand de Saussure (1916 > 1990 p.15): **"…language is a system of sings expressing ideas, and hence comparable to writing, the deaf and dumb alphabet, symbolic rites, forms of politeness, military signals, and so on".**

De Saussure thought that language is just one of the many different sign systems, the study of which could be called semiology. Contemporary semiotics researches the substance, structure, and functions of signs (Tarasti 1990, Forrester 1996). As explained in Chapter 3, besides the name attributes, any materially manifesting element of an entity can function as a sign of it. The only condition is that its memory representation is processed as a sensory attribute into the memory representation of the entity. A scent of a familiar perfume or after-shave lotion can remind us of our old friend who used to use it. The way a man walks on the street ahead of you may act as a sign of your old friend whom you have not seen for years.

In the RA-model of language linguistic expressions act like De Saussure's signs; the spoken or written words and sentences have their attributes on the base- and value-line of entities' concepts. They function as mental interfaces between the material and mental by recalling the situation relevant set of other attributes to explain the sensed elements of the situation.

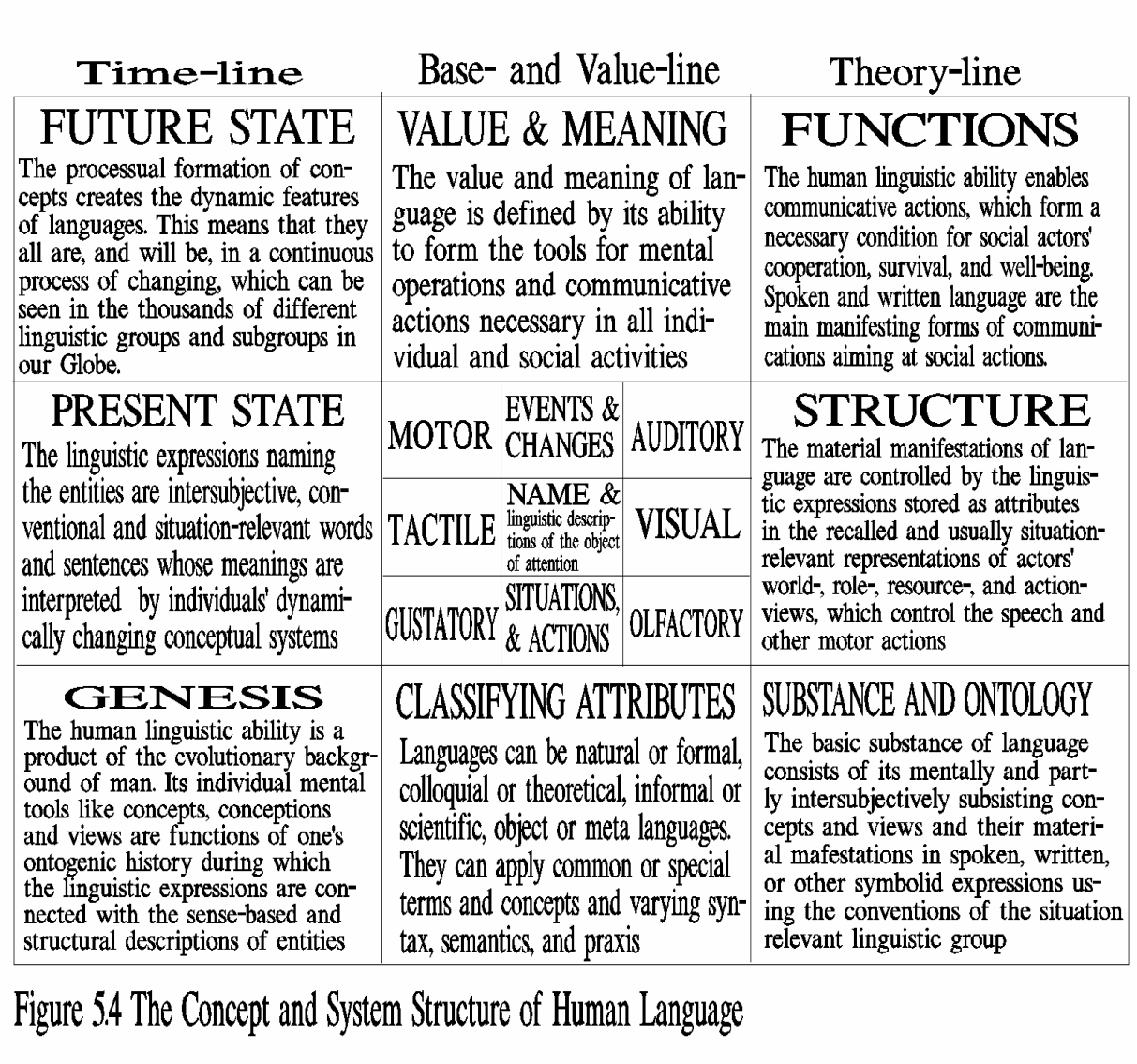


Figure 5.4 The Concept and System Structure of Human Language

Human linguistic abilities manifest in written or spoken words combined - rule or model steered - into meaningful sentences. In steering our speech acts we are using the situation relevant set of concepts and express our thoughts with a set of conventional words and sentences, which are recalled or created with the cues of the other features of the situation. Apparently we are apt to follow the 'ready made models' when forming our situation relevant linguistic expressions.

Our actions manifest in our bodily movements leading to a purposed change or end-result in our environment or in our relations with it. In our bodily actions, we are using our tacit knowledge, which, in the RA-model, is seen as our brain's ability to process a situation relevant flow of efferent action potentials to steer the thought set of actions. All conventions concerning our manifesting speech or other motor actions have then an analogous steering system in our mental structures.

The mental entities steering of the conventional linguistic and other expressions in the RA-model are our concepts, conceptions, views, and situation relevant sets of performance models. The words we use function as name attributes in our concepts. Our sentences are often expression models connected with the situation relevant views and actions recalled into our working memory. I am assuming that we often use in our speech acts the 'ready made models' and their situation relevant modifications as well as we use the models in our other motor actions. It is easy to understand that children at age of three or four years can manifest their thoughts in perfect sentences, if we see it as a use of sentence models learned and adapted with similar situations one is just living through. But it is difficult to see it as a manifestation of the control of complicated sets of rules linguistics have invented in searching invariables in the manifestations of our linguistic abilities. Rules of linguistic expressions seem to be situation related conventions, which form linguistic elements of the sensory attributes of the actual situation and action views.

The RA-model's explanation of the genesis of our linguistic abilities through the processual formation of the linguistic attributes in our concepts of entities reminds the early Wittgensteinian picture theory of language. We comprehend the situations in the world with the help of views. When needed we can use the ready model or rise on the creative level and find a new linguistic expression or motor performance better suited with the requirements of the situation. As seen in Chapter 4, we are apt to use automatized or other wise spontaneous models in our manifesting actions. This may depend on the fact that the performance models, or the flows of the efferent action potentials steering our manifestations, are easier to initiate and process when they are done and repeated thousands of times before. As explained above, our tacit knowledge is needed to steer all of our speech and other motor actions.

The **value and meaning** of the human linguistic ability has become clear above. It is based on the fact that language enables our communicative actions and then helps to build and maintain our social roles in our communities. It offers us also the mental tools for expressing and executing our thinking, planning, and decision-making operations. With our linguistic abilities we rise above the animal level of life, though all animals seem to communicate by using their own species-specific sign systems.

Languages can be **classified** many ways. In the lower square of the base-and value-line is a short set of classes of languages. Our natural language is the most flexible. Formal languages such as mathematics and formal logic are thought to enable more exact linguistic expressions than our natural language. However, even in the formal languages the meanings of the signs

are always mediated through our memory representations and concepts recalled by the used formal expressions. Thus the semantics, syntax, and pragmatics of any language are usable only through our conceptual structures formed when we study and learn the language. If the number of signs used is limited, the linguistic expressions may be more exact, but also the expression power of the language may become more limited.

5.5.2 The Theory-Line of Language

In Figure 5.4 on page 152 are some brief notes of the substance, ontology, structures, functions of the human language. I state there that language is a form of human actions and then its material manifestations or our speech and writing acts need the mental steering operations as all of our motor actions. Our subsisting concepts and views have the names of entities and sentences as situation relevant linguistic expressions as sensory attributes. They are stored and usable in the same way as the other sensory attributes of the entity. This offers a natural base for our linguistic ability.

Thus, the **structure** of language is connected with the structures of other memory representations. Linguistic expressions are just situation relevantly used words, phrases, and sentences, which are conventional in the subject's communities. If we accept RA's situation views as the basic orientation to the world, we can see all rules of grammar just as situation relevant linguistic conventions. I assume that they are stored as usable linguistic elements with the views of situations and actions. As mentioned earlier Wittgenstein's picture theory of language can be understood by the RA-model of views and their linguistic expressions as one type of sensory attributes.

RA's concepts and views of the world, roles, resources, situations, actions, interactions, etc., offer the structural tools for the **functions** of language. As stated above the main function of our linguistic ability is to enable communicative actions and mental tools for our planning, decision-making, and creative thinking. The conceptual structure of our linguistic ability is of course part of our thinking and planning abilities. They, in turn, are used to formulate the matrix of our decision criteria, which are needed to systemize our decision-making procedures and rules. Our linguistic abilities are then a central role then discussing the basic substance of man. Our concepts and linguistic capacities are able to extent our power to understand and control the world from here and now to the past and future and anywhere in our Universe.

5.5.3 The Time-line of Language

In Figure 5.4 the time-line has three squares. The lowest presents some words connected with the genesis of language. The development of the mirror-neurons in the course of evolutionary processes seem to offer a natural meta-theory of the genesis of the human linguistic and other learning abilities (Rizzolatti and Arbib 1998, Ramachandran 2001, Motluk 2001). As described earlier our brains' motor neurons prepare to produce the proper flow of efferent action potentials to steer the same speech or other motor action that has just been perceived through senses. We seem to be 'apes' or we learn by imitating. The voices used in the common activities of hunting and other affairs have formed the first cases of naming the referents of the objects of common attention. After that occasion the used voice and sound recalls the situation and the referental meaning of it. The RA-model of human concepts seems to offer a natural base for the genesis of human language. Linguistic expressions are stored as the other sensory attributes of the episodes, which were lived through. This meant that words became symbols or representations of something earlier seen and done, which was not here and now.

The **genesis** and development of individual's linguistic abilities is a function of one's ontogenic history. At age of two most children already speak fairly well and at four quite fluently and correctly the languages of their environments. And this happens without thousands of rules needed to produce grammatically correct linguistic expressions. The situation relevant use of language models, stored as the other sensory elements of the situations, seems really to offer a natural explanation to our linguistic abilities.

As explained earlier, RA's concepts are dynamic and situation relevant sets of attributes describing and explaining the sensed in our environments. But it seems that our whole conceptual systems are in a continuous dynamic change process. Linguistic expressions and their mental referents are changing as is seen in the innumerable amounts of different dialects, linguistic fads, new special terms and expressions of professional groups or gangs of youngsters or criminals, etc. We can interpret the heard and read by the most common or the latest concepts and views of the being. In fact, we have to choose the conceptual frame, which we apply to seen or heard when moving to new area of scientific or other culture.

Though the roots and nervous basis of our linguistic abilities are products of our phylogenic history, we seem to be social butterflies in our linguistic praxis. The need to be accepted by the other members of the community guides us to use the same or similar linguistic

expressions as the others do. At the same time we adopt or espouse the situation relevant meanings of the used linguistic expressions. This happens, as explained earlier, by processing a proper set of attributes to the formed memory representations of referents of the used linguistic expressions.

Thus, the **present state** in the time-line of linguistic connections to the world is built on the changing past. Usually the changes are hardly noticed because they come gradually, like creeping in your mind. As always on the time-line the present even here is just the point between the past and future. We live in situations with their ongoing linguistic expressions and speech acts. The history lives in our minds and steers the linguistic actions we take. It changes little by little opening new features in the future views. The time-line in the linguistic expressions manifests through the inflexions of verbs and the time defining adverbs. The past, present, and future have their own forms in verbs in most languages.

The **future** of languages seems to be formed by a continuous change, as explained above. New linguistic expressions and structures are found and adopted into common use. The builders of linguistic norms seem not to be the linguistics in universities but everybody in the practical everyday life at homes or in businesses and industries. The entities and the linguistic expressions to refer them are created in our everyday life. Even the old familiar entities can get new, handier, or more fashionable linguistic expressions. Our concepts are in a continuous change-process and so are the linguistic expressions in them. This means that our speech acts get new words and sentences to communicate about the happenings in our environments. Thus our language is as dynamic as our concepts, with which we interpret the sensed.

5.6 The main Mental Dimensions of Organisational Culture

5.6.1 Values, Norms, and Language of Culture in the RA-model

Organisational cultures manifest in the ways its members think, speak, behave, and act and also in the artefacts they produce and use (Deal & Kennedy 1982, Schein 1986). I have discussed the mental dimensions of organisational culture briefly in my article (Martikainen, 1986). I explicated my intuitive definition of organisational culture in Chapter 1 as follows:

The core mental elements of organisational culture are formed by the values, norms, and language adopted by its members.

I have formulated the substance of this definition in Figure 5.5 on this page . The basic thought in this definition is that **values** control the goal orientation and the **norms** steer the performances of an individual.

Time-Line	Base- and Value-Line	Theory-Line
FUTURE The future state of org. and other cultures depends on the feedback systems which process the values, norms, and language of the members of cultures. Trends hint towards slow development of the globality of cultures.	**VALUE and MEANING** The resource features of cultures of communities are in its controlling power that co-ordinates members' mental energies to aim at the commonly valued goals with accepted norms of achievements	**FUNCTIONS** of cultures are 'structure-specific' as shown below. Functions are formed by the dynamics of values, norms, and languge to steer the goal setting, performances, and the communicative actions of individuals.
PRESENT STATE The internalised elements of org. and other cultures get their steering power and dynamics from the dominant or reorganised feedback systems of the communities one lives in.	**CULTURE** manifests in actions, interactions, and artefacts of individuals and communities, but its real substance is in the mental structures of its members. They control the action and behaviour models of cultures	**STRUCTURES** of culture are formed by: VALUES which define the goal setting of actions, NORMS which control the levels of performances of actors, LANGUAGE that enables communicative actions, and FEEDBACK-SYSTEMS, which create and maintain them on different levels of communities
GENESIS Values, norms, and linguistic expressions are processed and maintained as attributes of our concepts and conceptions by the feedback we get via our interactions and exhanges with the entities in our communities	**CLASSES, STEREOTYPES** and other attributes All cultures are built of many subcultures that diverge from the mainstream and have their own values, norms, and linguistic expressions manifesting in their overt behaviour	**SUBSTANCE** The basic nature of culture is hidden in its subjective and partly intersubjective subsistence of common values, norms, and linguistic expressions steering the human communications, exchanges, and other activities

Picture 5.5 The Concept and System Structure of Organisational Culture

Thus our behaviour-models are based on these mental features of the culture we have adopted as members of it. The common **language** enables the **communicative actions** needed in all interactions in organisations. In Chapters 3, 4, and in the above sections of this chapter we have seen that values have the steering power on individuals' ways of thinking and acting. **Values** steer the goal-orientation and the intensity and duration of motivation to perform the planned activities to achieve the valued goal. This, of course, requires that the values have been internalised or processed as **value attributes** into individuals' concepts concerning the entities in question.

Accordingly, **norms** in the RA-model are attributes in the concepts of entities describing their hoped-for or ought-to states of affairs, which are within acceptable limits, allowed, legitimate,

or some other way 'normal'. We adopt these **'norm-states'** of affairs as norm-attributes on the time-line of our concepts of the entities in question. This adopting process is using either our own basic values and principles or the organisational values and norms as the judging base.

Norms are important part of the behaviour-models our communities are mediating us through the roles we are given by them. Norms can concern the quality, quantity, intensity, timing, results, costs, productivity, profitability, etc, of our actions and activities. When our values and goals define the purpose and end of our action, our norms define the detailed ways and methods by which they are assumed to be executed. Thus, **norms** express the commonly or even officially permitted or approved performances in the direction of values. They describe the limits of acceptable zone of behaviour and achievements in different areas of responsibilities in life and interactions.

Thus, when our values and norms subsist as attributes in our concepts and in our mental steering system and if they are genuinely adopted, they are also elements in the organisational culture, which is assumed to steer our actions. As mentioned above, the steering power of culture depends on the degree the advertised values and norms are **internalised** by the individuals in the organisation. Internalising in the RA-model is a process, in which a proper set of value attributes is processed into individual's concepts of the entities in question. As explained in Chapter 3, concepts – as all memory representations of entities and their attributes - are processed as by-products during the everyday interactions and exchanges between individuals and the entities in question. These processes furnish the value attributes only to those entities, which have really functioning resource features seen from the individuals' point of view. As Martinsuo (1999) has noticed, values are not implemented into an organisation by proclamations. In my OD-programmes, I have seen that individuals' value adoption and internalising can be promoted by combining the monetary and other managerial positive feedbacks with those entities we want to be valued.

The mental features of our language and linguistic abilities are briefly discussed above in section 5.5. The importance and central role of language as one of the mental dimensions of cultures has been as a natural precondition in this study. In my brief article (Martikainen 1986), I assumed that language is the third of the main mental dimensions of organisational culture used to steer our behaviour and actions. Language as a mental element of all cultures is important, because our mutual understanding depends on our ability to common interpretations of the meanings of the used words, special terms, and sentences and their contextual or situation relevant variations. As seen in Chapter 3, the meanings of words,

sentences, and other symbolic expressions are in the structures of our concepts, conceptions, and views. They in turn are processed during our communicative and other actions with the entities in our environments. Different types of teaching and training programmes can intensify the conscious elements of these processes. The end-results of learning manifest in the easiness of recalling a proper set of memory representations or bodily performance skills in planned test situations.

5.6.2 Action, Behaviour Models, and Artefacts as Dimensions of Culture

As explained above all our speech and other motor actions and our behaviour models are steered by our values, norms, and situation related rules of behaviour. The tools, buildings or their ruins, and small collections of linguistic signs are often the only manifestations of many ancient cultures. The tools, cloths, and buildings tell their stories easily, but some hieroglyphs and signs of Maya's, for example, have been hard problems for archaeologists and linguistics. There has not been any individuals whose memory representations and concepts have had those signs as linguistic attributes, which carry the conventional meanings of the signs. That's why it has taken so long to decipher the found linguistic information.

I am not going more deeply into the different features of organisational culture, because they do not belong to the core ideas of this study, though they will form one of its main application areas. Understanding that the mental dimensions of our knowledge, values, norms, and language form the essential features of managerial work. In Figure 5.6 are some pragmatic areas of the problems of managing organisational culture. These areas are formed of materially manifesting, mental, and managerially changeable features of organisational culture. I am just mentioning that rules, routines, rituals, feedback systems, behaviour-models, and different types of artefacts are often used as tools to implement the planned changes of organisational cultures.

One can start by mapping the manifesting features of organisational culture as listed in Figure 5.6. However, the core problem of managing organisational culture is defining its mental essence. This means that the steering values, norms, language, rules, hopes, fears, and expectations of individuals and groups must be found. They must be known when planning the changes of the culture. They form the present state from which the new growth must start. The future state of culture needs a series of planning phases with all of the interest groups of the organisation.

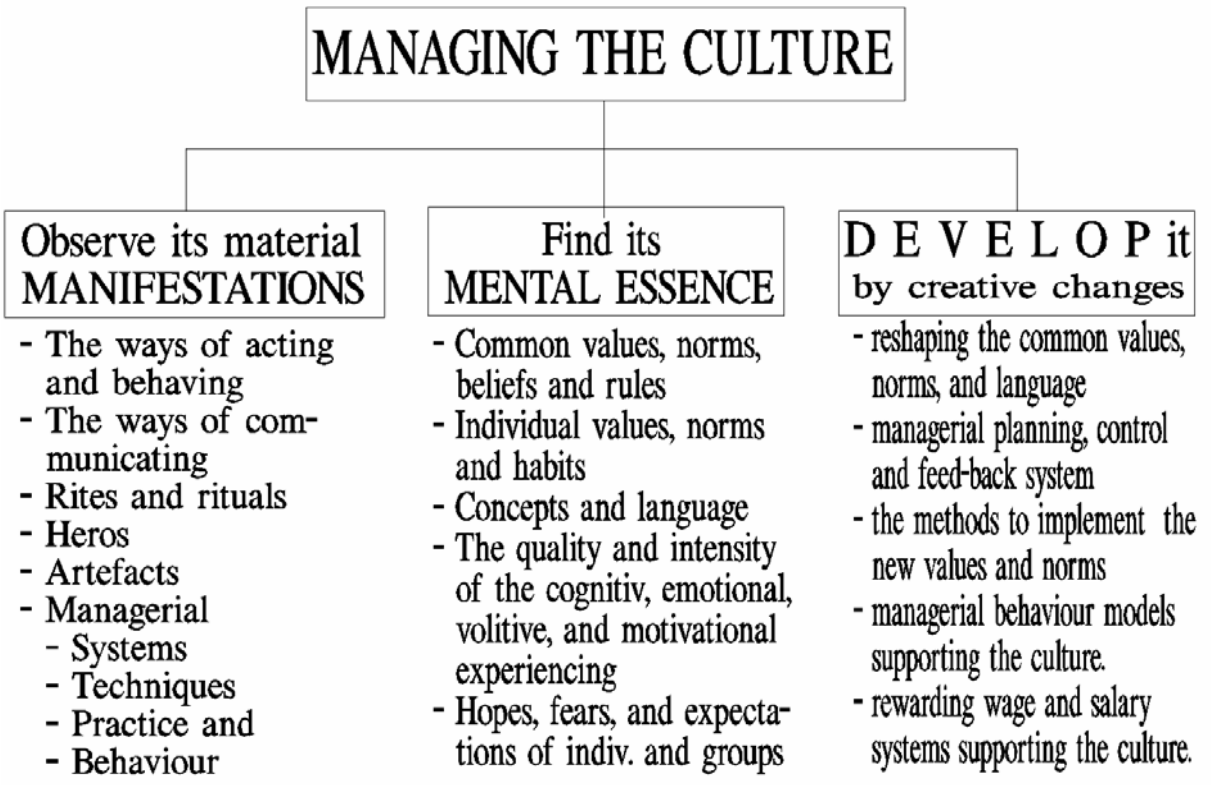


Figure 5.6 Managerial Areas of Organisational Culture

In the implementing phase of the new organisational culture is to plan the changing tools. In the RA-model all concepts and their attributes are built during the actions and interaction with other members of the organisation. The value attributes describe the resource features of entities. Thus, the way individuals interact in the organisation form the basis on which the experienced culture is built in its members' minds. As mentioned earlier in forming organisational culture proclamations and lip service doesn't change anything. The power of change is based on the real feedbacks individuals get from the organisation and its members especially from their bosses and managers.

Thus, the main tool in improving the management of an organisational culture is the systematic rebuilding the feedback systems on all levels of the organisation. This change should include a thorough training in the managerial behaviour models, which support the other new feedback systems. The elements of culture are formed and maintained in the course of interactions and exchanges between individuals and organisation.

6 RA-MODEL'S CONNECTIONS WITH PHILOSOPHY

6.1 RA as Meta-Model for some Philosophical Problems

In the postulated and abducted substance, structures, and functions of the RA-model in Chapters 2, 3 and 4, I assumed that in the conquering of the unknown mental we could use the same analytical approach the physicists and other natural scientists have used. The afferent action potentials and efferent action potentials function as material interfaces between the human mental and his outer or inner material world. The postulated mental primitives, atoms, and molecules are objects of empirical neuropsychology and memory research and function as mental interfaces between the material and mental worlds. Different formations of them are used as the basis in cognitive psychology. As seen in Chapter 5, the postulated system structures of human memory representations, concepts, and human mind enable us to take a psychological grasp of the elements of the problematic theoretical entities such as knowledge, emotion, motivation, value, norm, language, intellect, culture, etc.

The system model of RA's concepts and mind offers a very flexible frame of the human mental and for handling the different features of object entities and their descriptions. The recalled attributes may describe just the stereotyping or classifying features of the object entity or they can comprise a perfect collection of the latest scientific and best explaining theories of it. The set of recalled attributes seems to depend on the challenges of the situation one is living through and, of course, on the availability of the situation relevant memory representations of the objects of attention in subject's long-term memory.

The atoms and molecules of the human mental seem to offer natural explanation grounds for many of the so-called eternal problems of psychology and philosophy. If we accept the reality of the human memory representations and their system structures as postulated in Chapters 3 and 4, the multidimensional mental state of knowing is understandable. Depending on the situation and the recalled attributes the main focus of the mental state can have cognitive, emotional, volitive, motivational, or some special features. As seen in the previous, the recalled value attributes have many important functions, which seem to have had a central role for the survival of the human kind and other actors.

The ability to estimate the resource features of the objects of attention has created the primary qualifications for successful interactions with one's environment. Actor's memory representations with descriptions of entities' actual and potential resource features, now or in the future, carry values of the entities. Goal and situation oriented actors usually have the value attributes always present when the interpreting concepts are recalled. Thus cognition is always connected with values, emotions, and meanings although they may stay at the background in all familiar situations. In what follows I shall briefly discuss the four central content items in my four definitions when they are seen as philosophical opinions instead of seeing them as psychological explanations of these basic problems of human sciences.

6.2 RA's True Knowledge and Epistemology

In the Chapters 2, 3 and 4 I have postulated a preliminary draft of a system model of man, his concepts, and mind. Concepts and mind as formations of our memory representations and frames and tools for mental actions and experiencings create a set of the mental apparatuses we use to plan and control our everyday actions and interactions. In Chapter 5, I ventured to search the psychological dimensions of human knowledge seen through the RA-model and described in Figure 5.1. The genesis of the mental state of knowing is caused by the recalled concepts, which explain the meanings of the attended object entity or entities. Our working memory offers the mental space where the conscious and concept-based phases of these processes which are lived through. Thus, human knowledge is a concept-based mental state of experiencing and understanding the meanings of the objects of attention. They can be material or imagined entities or perceptions of entities or their changes in our environment. This analysis of the birth of the mental state of knowing is a psychological explanation of knowledge. It refers to the mental entity to which the term **belief** in the Plato's definition of knowledge is probably referring.

Plato's beliefs had to be true and justified for to be valued as knowledge. These two normative attributes have caused most of the discussions in philosophy. The content of belief seems often thought to be understood without further analysis. The truth and justification of belief have been the main problems of philosophy. The postulations in the RA-model offer a possibility to view the truth and justification of the mental state of knowing from a new point of view. As explained earlier the sources, which can initiate or change our mental states, are either the sensory impulses or our mental processes and actions of thinking or imagining. In

any case, the descriptions of the objects of attention, which we experience, are products of the interpretations-processes our brain-system offers for our conscious use.

Thus, the RA-model shows that both rationalists, such as Descartes, Leibniz, and Kant, and empiricists, such as Locke, Berkeley, and Hume, have been partly right in their thoughts about the sources of knowledge. The mental state of knowing can be caused both by our sensed, thought, or imagined objects of attention. Even Kant's trial to combine the two schools of philosophy would have succeeded better by using the postulations in the RA-model. He thought that our sensations get their meanings through the human perception and understanding mechanisms, which can be fully understood by the RA-model of concepts and their role in perception process. If Plato and Descartes had left their ideas and spirits inside the creative and emergent human brain-system, the philosophers of the following millenia had avoided the problematic dualism of the material and spiritual.

The reliability of the mental state depends then on the trustworthiness of the information our senses are encoding and the truth preserving qualities of the interpretations our brain processes. The RA-model of the concept of truth is presented in Figure 6.1 on page 164. Its base-, time-, and theory-lines analyse the concept of truth and defines it as the situation relevancy of the mental state of knowing. The first interpretation from afferent action potentials to sensations offers us a situation relevant description of our environment. This seems function even in advanced cases of Alzheimer disease, but the second phase of interpretation may be faulty. The patients have sensory information of their environments but the interpreting concepts are faulty or totally lacking. In the RA-model this means that the sensation as search attribute does not manage to recall the correct set of concepts to explain the sensed. **Illusions** are typical examples of these faults. **Hallucinations** are examples of pathological malfunctions of the central nervous system.

If truth or truthlikeness is seen as similarity, correlation, or sameness between the experienced description of the object entity and the object entity as it is in reality, we can never solve the problem of truth and truthlikness of the experienced. Kant was partly right when maintaining that we do not have access to 'Das Ding an sich'. According Kant (1787 / 1986), our perceptions are formed by our sensations and the human ability to knowledge. As neuropsychology shows us, the experienced is and will always be a product of the two-phase of interpretations; the sensory interpretations are our sensations and the concept-based interpretations are our perceptions forming the concept-based conscious mental state of

knowing. We do not know whether these transformations from material afferent action potentials into experiences are truth preserving or not.

The Time-line	The Base- and Value-line	The Theory-line
FUTURE STATE The best explaining theories of brain research and neuropsychology will probably in the future explain how our brains produce our mental experiences and what is the degree of their truthlikeness compared with the real entities around and inside us.	**V A L U E** of entities is based on their resource features. The situation relevant descriptions of entities and their qualities explain how and for what purposes they can be used or not used. Thus, truth, situation relevancy, and truthlikeness can be seen as value attributes of information and knowledge	**FUNCTIONS** If subject's interpretations of available linguistic expressions and other sensory information about an entity can be seen as situation relevant or truthlike then it enables him to rely on it and base his plans and decisions on the chosen criteria set
PRESENT STATE Since the human cognitive states can be illusions or even hallusinations lacking all reality control, or based on faulty information, the need of true, authentic, and testable descriptions of the reality is set as the goal of the scientific and even the everyday strive for knowledge.	**T R U T H** in the RA-model is a thoretical term referring to the degree of situation relevancy of subject's mental state of knowing. Its optimum level is achieved when it is based on repeatable sensory information interpreted by the best explaining theory of the object	**STRUCTURE** The degree of situation relevancy of the mental state of knowing depends of the reliability of the sources of the sensory or linguistic information and the truth preserving features of our brains interpreting processes first into sensations and then via recalled concepts into knowledge of the object entity
GENESIS The most plausible explanation of the genesis of the conception of truth is based on our everyday experiences supported by the results of brain research and neuropsychology. The sensory-line of interpreting the encoded information seems to tell us what the world is like. The memory-line in turn offers the useful explanations of the meanings of the sensed objects of attention.	**CLASSIFYING ATTRIBUTES** Truth as the quality of the relation between the experienced and the reality depends on the unavoidable interpreting transformations between the material and mental. Thus, situation relevancy might be a proper description of the quality of this relation called as truthlikenes, correspondence, similarity, or sameness.	**ESSENCE & ONTOLOGY** Seeing truth as a situation relevant mental state of knowing means that a true mental state describes the object of attention in reliable way, which enables subject to get a good grasp of the reality and handy tools to control his plans, interactions, and exchanges with the entities in the world.

Figure 6.1 The Definition and Main Structural Descriptions of Truth.

As explained earlier, if we build our beliefs on the theory of evolution and believe our everyday experiences, we can say that these transformations into the mental state of knowing are in most cases situation relevant ones. The humans as a species and all other actors have survived by relying upon the mental states of knowing, which these transformations create as planning and controlling tools for our and to other actors' use.

If the truth is seen as the reliability of linguistic expressions the same criteria can be applied. The information source of knowledge should be trustworthy. In most cases we just have to rely on the quality of our sensory on-line connections and our memory representations as tools for the interpretation processes our central nervous system offers us to create the mental state of knowing. As explained earlier, linguistic expressions are just one group of the outer information our senses encode to form the sensory attributes in our memory representations of

present entities and situations. If they recall a set of other attributes, which fit the received linguistic information, we can ascertain its relevance with the situation.

Thus, the truth seems to hide behind the transformation processes of our brain system. Relying on the evolutionary thinking and the results of brain research and neuropsychology, we can though say that our mental states of knowing are in most cases trustworthy and they offer situation relevant descriptions of our environment for successful interactions and exchanges with the entities existing and living there.

In the mental state of knowing individuals attain **concept based conception** and understanding of the object of attention. I am assuming that individuals become conscious of the objects of attention when recalling concept-based descriptions about them. As explained earlier, **consciousness** can now be seen as **'concept-basedness'** when forming or processing one's mental state of knowing. In the state of knowing individuals are then able to recognise, name, and comprehend the meanings and some other features of their object of attention. The number of attributes recalled depends on the cues, which are present and activated by the stimulating energy impulses subject's senses are receiving in the situation. It depends, of course, also of the contents of the memory representations stored in the long-term memory of the subject.

The recalled attributes vary from a few stereotyping or classifying attributes to a full set of attributes on the time-, value-, and theory-lines of RA's concepts. In effect, the quantity and quality of our knowledge is often measured by the descriptions we have acquired as attributes on these lines. They are results of our learning processes. As explained earlier, the attributes on the time-line are descriptions of object's history, present state, and of the speculated or hoped future states. The descriptions on the theory-line consist of descriptions of object's substance, structure, and functions. The attributes on the value-and meaning line are based on the observed features of the object. The name, visual, or audible attributes function as search attributes recalling first the classifying and value attributes to explain the sensed. They in turn are able to trigger the emotional reactions, which are strengthened by the functions of the endocrine glands and their secretions, like adrenaline or other types of hormones. These compilations of the mental, neuronal, and biochemical interactions and steering effects are here seen as one form of the phylogenic rationality. Their cooperative effects have optimized the opportunities of survival of our ancestors. They are functioning even in today's human beings, but it may cause some behavioural problems, if the cultural polish of values, norms, and habits of individuals are too thin.

If we see human knowledge as one of the experienced steering elements of individual's mental, then it must be seen in all its multi-dimensional and multi-level richness. This totality is on the background when individuals try to make **situation relevant decisions** about the proper ways of acting and reacting to achieve the valued end state of affairs. **Situational relevancy** is a pragmatic normativity requirement for knowledge, because this criterion describes its ability to help in generating the planned results. Through the decision-making operation, knowledge has the causal steering effect to the actor's speech and other manifesting motor operations. For a RA knowledge is thus a mental tool for planning, decision-making, and control of actions and interactions.

Thus, in order that the experienced state of knowing or knowledge is a good and working tool, it should be situation relevant and enable effective actions, which can lead toward the aimed goals. Situation relevancy does not mean that all what matters is here and now, but all the short-term and the main long-term effects should be taken into account. This is made possible by the attributes on the time-line of actor's concepts and by the basic values and principles, which are guiding individual's decision-making.

Since Plato, knowledge has seen in philosophy as **justified and true belief** (Niiniluoto 1988, Lammenranta 1993). According to Lammenranta, **belief** is a mental entity called **proposition**. It is **something** which can be true or false and on which we can aim or address our beliefs (Lammenranta 1993 p. 81). In the RA-model a proposition might refer to the mental state, which is caused by the linguistic expression referring to the object of attention and recalling the situation relevant concepts explaining its meanings. Sentences usually refer to situations and actions or their changes and outcomes. Thus, the mental states to which sentences most often refer are situation and action views as explained earlier.

This mental and unexplained 'something' is a proposition to which one can refer by using the popular term belief. What propositions then really are, is left on the mercy of the interpretations made with the colloquial linguistic abilities of everyman. This unknown entity is then used in all arguments of the truth-value and justification of our beliefs. Aren't philosophers running in a vicious circle when the **true and justified** features of the belief have been chased by using beliefs - or the unknown something - in their arguments?

Thus, it looks that the ontology of the belief and knowledge is often left in a minor role in many philosophical studies of epistemology. One has seldom asked what is the real substance of belief and where and how does it exist or subsist. The real referent of the term belief has

been left at the mercy of everyday understanding. However, Plato's theory of knowledge was based on the immaterial and everlasting ideas. Their ontological position was contrasting that of the changing material. Thus, Plato's ontology was also part of the confirmation of the truth and justification of belief.

While Plato's **forms** were immutable and everlasting, RA's **concepts** are the recalled sets of the features of the individuals' memory representations of the attended entities. Thus, they are mentally subsisting and situation related dynamic entities. We cannot observe Plato's forms, but we can test our memory representations and that part of them, which form the situation relevant set of attributes to interpret the sensed. The mental state of knowing in the RA-model is based on the recalled concepts and their attributes. The recalled sets of attributes are the only ones, which can have their effect on our decisions. That's, why it is important to realize that concept and knowledge are terms, which are often referring to different mental entities.

In the RA-model, beliefs and **propositions** are memory representations or **situation and action views** in the subject's mental. They can be manifested by spoken or written words and sentences adopted through the conventions of the communities, in which one has been living. They in turn are fitted with the situation related requirements, and other rules of linguistic practice. If we interpret the belief element of human **knowledge** through the RA-model – Figure 5.1 in Chapter 5 - we are able to build a new 'psychological epistemology'. In this theory of human knowledge the **genesis**, **substance, structure, functions, and the roles of our concepts and memory representations** have an emphasized position. This is opening a new set of criteria also for the normative elements of justification and truth-likeness of knowledge. I have explained earlier how the processual phases of sensory memory, attention, sensation, and concept-based perception materialize the factual and empirically testable elements in the formation of our mental state of knowing. When seeking the truth of our beliefs, one could and should first see what the empirical psychology and brain research already know of this mental state and its material base and components.

When the epistemic problems are seen through the RA-model, the core of the problems are moved on the two transformations our brains are processing during all of our interactions with our environments. Our sensations as mental primitives and mental atoms function as **search attributes**, which are able to recall – in most cases - the situation relevant memory representations to describe and explain in detail the objects of attention. As explained before, the **dorsal and ventral streams** of the visual or other information processing exemplify our on-line and memory-line connections to our environment. The **'directly experienced'**, or the

sensory **on line reality control**, is interpreted by **the remembered or the memory-stream** which offers the conceptual explanations of the sense encoded information (Kolb & Whishaw 1996).

A flying swallow as well as the Formula 1 driver Mika Häkkinen needs these two - or the on-line encoded and interpreted or the remembered - streams to process the visual information to catch their prey. The former is hunting insects and Mika possibly Michael Schumacher in a certain Formula 1 race. Mika's job may be harder, because he has to remember the detailed features of the racetrack, proper places of bypassing, the resources of the motor and gasoline tank in his car, and guess the behaviour of the hunted and possibly of the other drivers in the rapidly changing situations.

This two-phased structure of our visual perceptions explains why our perceptions are **'theory laden'** as Hanson has maintained (Hanson 1959). The concepts of a RA have their time-, value-, and theory lines and so his perceptions of are always theory laden. The RA-model explains why we often see what we are waiting or expecting to see; it is depending on the cues we are drawing from the situation we are living through without sufficient control of the sensed. Thus, our illusions can often be explained by this phenomenon connected with our perception process in which the sensed is interpreted by the concepts recalled. Folkpsychology has long known this human disposition to misinterpret the sensed. From my adolescence years, I remember how my uncle reminded my cousin to **watch twice** before triggering the small-bore rifle to avoid shooting a pine marten instead of a squirrel. Though this inclination to faulty interpretations is well known, many men with red caps in Finnish forests have been shot as a deer or an elk.

The theoretical entities postulated in this study seem to move the **genuine problem of epistemology** inside our heads and behind the on-line and memory-line streams, which are processing our sense-based information and producing the transformations between the material and mental. The compound processes of the dorsal and ventral streams of our visual information form an example of the two channels in our brain processing of our sense-based information. When leaning on the evolutionary theory, the survival of species seems to need both 'the direct' or **'the on-line'** or sense-based connection to our environment and the memory-based interpreting connection to utilise the earlier experienced and to make the sensed understood.

When abandoning Plato's ideas and other immaterial, spiritual, or otherwise eternal entities, the only forum for our knowledge seems to be in our brains. Its neuronal nets form the material space for our memory functions. They in turn are creating the mental space, where we are experiencing our knowledge as concept-based interpretations of the sensed or thought object of attention. In this interpretation, we are using the recalled sets of attributes of our concepts as tools to understand the meanings of the objects of attention. Human concepts and SCES in the RA-model seem to be able to give a new approach and an illustrative description of that mental state, which we usually call human knowledge. They open slightly also the unexplained emergent and steering processes of our brains, which are enabling our mental life and rational steering of our actions.

6.3 RA's Values and Axiology

The 'Copernican revolution' of the structure and functions of human concepts in Chapter 3 opened new possibilities to review the human mental, values included. Classes, which were previously often understood as concepts, became reduced into a group of classifying attributes on the base- and value-line of our concepts of entities. In the previous chapters, I have explained how the **resource features** of the entities determine the **values** of entities in the eyes of Rational Actors. These features are processed and stored as value attributes in subjects' concepts of entities. In the RA-model, concepts are the situation relevant and recalled sets of attributes of the memory representations of **singular particulars, their systems, or their classes**. Entities as such are not values they are then just **carriers of values**, as Ahlman (1920) has already maintained. Values are then mental and thus subjectively and situation relatedly experienced resource features of entities. The pragmatist - and everyman - finds the value of an entity by asking: 'What is its value and meaning to me?' or, 'What can it be used for?' Entities, which do not have any actual or any foreseeable use, have hardly any value for a RA. In chapter 4 I have explained the structure of the RA's scene of experiencing and steering, in which the highest level of steering consists of among other things the basic values, norms, principles, and long-term goals. Though value attributes are processed into our concepts of entities, RA can consciously use his basic values and goals to determine and define the value attributes to the entities he has been or is interacting or confronting.

The above concerned the values of material entities. As presented earlier, the same rules seem to apply even on the moral, ethical, esthetical, religious, and other values, which are built on

different types of theoretical entities. Man as a social and rational actor is bound to the moral, religious, and even esthetical norms, which have been valid in the communities he has been raised and lived during his ontogenic history. Through the community's norms we are taught the values, which then are steering our goal settings. Even individuals' valuing of their Gods is based on the learned esteems and rituals used in the community one is born and raised. The real value of one's God is based on God's omnipotence of being the sinner's **Saver** from the earthly problems and from the hell's fire to the heavenly glory. Again, the real value seems to depend on the resource features of the valued entity.

Even a subject's intrinsic valuing of oneself seems to depend on one's material and mental resources. The quality and quantity of resources determine the degree of freedom to act and fulfil oneself. Thus, both the mental and material entities are carrying their values in the resource attributes of their concepts. The basic values in the French Revolution were: Freedom, Fraternity, and Equality. Aren't they all carrying the most basic and common resource features for every citizen in any society? It is easy to think that I have got lots of social resources if I am **free** to choose my education, occupation, and my way of life and have a society in which this is made possible by **fraternal** links to my fellow-citizens and the different institutes where I am treated in an **equal** way with all other members of my community.

If we review the value problem through the RA-model, we can easily explain that both the value objectivists and value subjectivists are partly right. This depends on the fact that there are no values without entities carrying them and without valuing actors who need these entities as resource factors in their actual or future actions or metabolic processes. The value attributes are always mental entities but the carriers of them can be either material or mental entities. The actions in which the resources are needed and used can be either mental operations or materially manifesting acts or activities. The most usual mental operations are our thinking, planning, and decision-making actions when preparing some goal oriented interactions with our environment. The most important mental resources are our knowledge and values, which are needed to do the planning and setting the criteria matrix for our choices and decisions.

According to **G. E. Moore's** value objectivism, values and goodness are like colours, special properties of entities. They can be 'sensed' only by an 'autonomous moral faculty', like colours can be seen by our eyes' visual abilities. Moore maintained that values couldn't be reduced to material entities. Moore's 'autonomous faculty' and the anti-reductionistic position can be

understood by the RA-model, in which values are processually formed attributes in subjects concepts and then often unconsciously built properties explaining object's resource features seen from the point of view of the subject and his actual and/or potential future actions.

The RA-model explains the basis of the naturalistic way of seeing values. There are as many values as there are needs. As we saw in Chapter 5, there are as many needs as there are actions and processes because in each of them we need and use different kinds of resources. All lacking resources are experienced as a need of the failing resource factor. Thus, the most natural way of classifying values and needs is to do it along with the main areas of actions and processes in which individuals are involved by their phylogenic and ontogenic histories. As explained earlier, the RA's main areas of needs and values are based on the metabolic, social, and rational dimensions of his processes and actions.

Hume's Guillotine rejects the possibility of logical deducing **the ought from the is,** or a **norm from a description**. In our everyday decisions and actions we do not use Hume's logic at all. Our goal orientation seems to be based on the value attributes our brain processes have formed into our concepts of all the situations and entities we have encountered and interacted during our ontogenic histories. As Rational Actors we simply infer that unsatisfactory situations can and must be changed and that the change can be done in a way, which means a betterment of their resources and thus a promotion in their living conditions. We seem always and in each situation to be able to say what is the direction of improvement of present. RA's creative imagination and his value attributes seem to be the mental tool to break down these old and much discussed beliefs in the philosophy of David Hume. Everyman's logic is his systematic way to solve practical problems and it seems to be different from that of Hume.

For human actors the situation one is living through or the experienced **'is'** seems always to be a valued object of attention. Entities have their value attributes because these are processed into the concepts of entities. Entities have always their resource features in the eyes of actors. Man as an actor is always future oriented being. The future states of entities are formed by increased quantity and/or quality of resources. Thus, even all descriptions seem to be value classified and then norm set from the individual's point of view. One can ask if it is possible for a human being to experience a value- and norm free entity or situation. If not, then the Hume's rule has not much use in human life. It seems that we do not use and need Hume's rule at all, because we continuously are braking it by applying our values and norms, which are processed into our concepts of entities.

The histories of the evolutionary changes of species and those of sciences and nations give strong evidence that all revolutions and even evolutions in nature, sciences, and societies have been created by this everyman's logic of decision making and acting. Individuals, groups, and communities have – through all the human evolution - had the idea that, creative thinking and goal oriented and cooperative activities can change the unsatisfactory states of affairs. Otherwise, we hardly had survived as a species. Of course, Hume was right in a way, because the resources, which have secured man's survival and increased his well being, have carried man's natural and leading values. But you can ask like Moore that do they represent the absolute good? This question is an inessential one in the long run, because all organic life in our planed Earth will be burned into gases when our Sun turns into a red giant. Thus, knowledge, power, money, good relations, and different kinds of Gods are examples of the resources, which advance the survival and well being of individuals and their communities. They seem to be carrying the basic values of most actors in our Globe.

6.5 RA's Values and Norms and the Problem of Ethics.

When confronting with ethical questions, RA is a pragmatist, who thinks that the goodness and badness of actors or the rightness and wrongness of their actions can be judged by the **effects** and/or consequences they have on the objects of their actions and the interest groups of them. Then, the effects are always seen from some interested subject's or his community's point of view. RA evaluates the other actor's actions in accordance with the norms, values, and principles to which he is accustomed. RA judges both norms and consequences according to their effects on the resource features of the objects of actions. As explained above, for the RA, the resource features of entities form their values. RA's **norms** describe the accepted qualities and quantities of performances in the direction of the adopted **values** and **principles**. The productivities of work, capital, material, and time are important values of any business company. The competitiveness of a business company is a function of the level of the total productivity of these production factors.

Thus, **norms** are the tools with which communities teach their members the pragmatic meanings of their values. As explained in Chapter 4, norms are mediated to individuals by the **roles** given to them by the other members of the communities, in which one is and has been living. Usually, the role consists of besides the norms of behaviour and actions, also the responsibilities and rights of the individual. Roles are usually adopted during the interactions

between the members of communities. In the systematic and participative organisational development work, the individuals themselves, guided by their managers, elaborate their roles and explicate them in written form.

Resources form the necessary conditions for the RA's' survival and well-being. Thus, the RA's ethical thinking is based on values, which describe the resource features of entities. Consequently, actions, which increase or safeguard subjects and his/her communities' actual or potential resources, and do it without unbalanced exploiting the resources of other's, are **good actions**. Analogically, actions, which decrease or damage the subject's or his/her communities' resources, or which unashamedly exploit the resources of other's are **bad ones**. If all the individuals on our Globe could adopt RA's ethical thinking, Global ethics would get its beginning toward a balanced exchange and interactions between individuals and nations. This may take some time, because the discussion of the need of global ethics has hardly begun (Kung & al. 1993).

The RA's **naturalistic ethics** seems to have similar features as the virtue ethics of Aristotle. Good actions are based on good values, which steer them. And doing good deeds one learns the good values. RA's ethics avoids the extremities both of the utilitarian ideas and the Kantian universally binding Categorical Imperative. It accepts that human beings are formed by the evolutionary processes as social individuals, who must take care first of themselves and their communities. The mental growth of individuals to see themselves as inhabitants of the one and same Globe using the globally adopted values and norms as criteria of their decisions and actions is a gigantic challenge for the whole of humankind and may take some hundreds or thousands of years.

For the RA, the good as such does not exist it only subsist as a resource attribute of actions and their consequences as explained above. The goodness of a knife is based on its sharpness as George Henrik v. Wright has explained (Wright 1963, 2001). To be more exact, the goodness of entities is based on the value attributes on the base- and value-line of their concepts. Sharpness is one of the good features or resource features of a knife; its bluntness is an anti-resource factor and then a feature of badness causing difficulties and harm.

6.5 Semantics, Semiotics, Meanings, and RA's Concepts

As seen in the previous, the RA-model of concept offers simple and universal descriptions and explanation of signs, symbols, linguistic expressions, and their referential and value-based meanings. Any materially manifesting entity can act as a sign if and only if its memory representation is processed as one of the sensory attributes of the memory representation and concept of the entity whose sign it is agreed to function. This rule concerns also all written or spoken linguistic signs and symbols and then all words and sentences. Thus, signs, symbols, and sentences get their referential meanings through conventions. They are processed and stored in the memory representations and concepts of the members of the community.

The universality of languages seems to be based on these features of the RA's concepts. Any set of phonemes, graphemes, words and connectives can be agreed to symbolise a certain entity commonly known to the members of the convention creating and using community. This feature of RA's concepts explains the big variety of written and spoken languages and the continuous dynamics of them. This feature explains also the difficulties anthropologists and linguistics have had in finding, for example, the meanings of the hieroglyphs of Egyptians or stories hidden in Maya signs. There is no people and no minds having these signs as sensory attributes of their concepts of the referents of them.

As presented in Chapter 5, the **sentences** have their referental **meanings** often in RA's situation and action views. Sentences usually describe situation, actions, events, or different kinds of happenings, in which several participants may be involved. The easiness of understanding the heard or read sentences depends on the recalled set of situation and action views. They in turn are formed of situation relevant sets of world-, role-, resource-, action views, which materialize the real options to act or react in the situation. This concerns also the communicative listening and speech actions. Thus, the substance of human language and the ontology and basis of semiotics and semantics is found in man's memory representations and their situation relevant use as concepts. They are creatively used as mental tools built on individuals' memory functions situated in his/her long-term memory and working memory of the human brain system. Signs, words, and sentences get their referential meanings through our concepts.

Besides the referential meanings, words and sentences have often **value-based meanings**. As seen in the previous, these meanings are carried by value attributes of the concepts of the objects to which the words and sentences are referring. In fact, these value attributes describe

the resource features of the object entity, as explained earlier. The resource features of entities are RA's values and they are dynamic, situation, plan, action, and need related properties of the object entity. We all know the everyday expression of entities' **value and meaning.** It seems to refer to this universal referent of their combined existence and subsistence; all values need a carrier and these 'value-meanings' are based on the resource features of the object entity carrying them. It seems to be difficult to find other values in our World. As mentioned earlier even the basic values of the French Revolution such as liberty, fraternity, and equality can be seen as the basic resources of every member of each nation and community.

6.6 The Mental Atoms of RA's Concepts and Universals

The analysis of concepts into its sense-based and structural attributes in Chapter 3 opened new tools to approach the philosophical problems of universals. In the RA-model, universals, such as classes, properties, redness, relations, Plato's ideas, etc. are mental or experienced entities, because they do not manifest in the observable material world. Thus, they can be either mental primitives - which are sense-based and sensed properties of material entities - or theoretical entities formed by definitions using other, already known concepts. Mental primitives are qualities of experiences, which our brain-system produces as the first and unanalyzed interpretations of the sense-coded afferent action potentials. They can be called universals, because they are produced by the phylogenically formed neuronal system and are possibly 'similar' to all members of a species. The names of these primary experiences are, of course, conventions valid in the community, whose members have jointly had them.

The redness of a tomato and redness as such are examples of mental primitives though the name of the experienced is convention bound. Motherhood is an example of a theoretical entity called relation, which in this case refers to the relation between two particulars, between a mother and a child. Common nouns are referring to universals like car, dog, house, man etc., which in fact are referring to a collection of classifying attributes or classes of these entities. Classes in the RA-model are theoretical entities formed of sets of attributes, which are describing the most common features of the particulars, which are – usually by convention - included to the class in question, as explained in Chapter 3. Classes can, of course, have their Carnapian intensions and extensions. In the RA-model intensions are formed of the selectively common features of the entities belonging to the class. The extensions are formed of the entities, which can be included to the class. In the RA-model they are naturally

processed features of our memory representations and concepts. Aristotle's universals were 'shared attributes' which were arrived through experiences as RA's universals are.

6.7 The RA-model and Intentionality

According to the RA-model, man is a situation and goal-oriented actor aiming and intending to the survival and well being as an individual and as a representative of humankind. Situation orientation is the normal mental state of any RA. As explained earlier, it has also been a necessary condition for man's survival and well being. The RA's concepts and views consist always of descriptions of the future states on the time-line of the concepts of all of the important entities in one's environment. There are descriptions of the future states in the time-lines of one's roles, resources, actions, and oneself as a person. The values and norms, which one has adopted during one's ontogenic history, steer the setting of the attributes describing the proper future states of entities in one's environment and the views concerning oneself. Intentionality is thus a natural feature in RA's thinking and in the overt behaviours and actions. RA's actions have always a goal; they are purposing to a certain and valued end-state within an acceptable time limit. Thus, the RA is always time- and goal oriented or intentional in his/her actions.

Man's intentionality seems to be a product of man's phylogenic history. The variations of weather and temperature along with seasons and between day and night have forced to learn the calendar for planning and acting in the proper time. Those who learned these basic features of intentionality survived, others not. Even to day the leading industrial countries are situated in the northern hemisphere, where the heavy changes in seasonal weather enforced one to learn the time scheduling early in the history of mankind. The degree and effectiveness of purposing and timing seems to be, at least partly, in our genes. However, the modern life with its calendar bound arrangements forces everybody to some level goal-orientation or intentionality and regularity in one's way of living. Nevertheless, the main source of man's intentionality is in the structure of his/her concepts and the future states of entities on their time-lines. They are forming our mental states toward some situation relevant goal and giving our thoughts and actions a meaningful intention and purpose.

6.8 RA's Consciousness

6.8.1 Consciousness as Concept-Based Mental State

Consciousness is RA's mental state, which is caused or created by the emergent processes of the human peripheral and central nervous systems. Of course, it is and will be a continuous problem area for neuropsychology and brain researchers how this transformation process really happens. I have used the dorsal and ventral streams - found in our brain's processes when they handle our visual afferent action potentials - as an example of how our sensations and perceptions are formed. The modern memory research can anyway show us that all our mental experiences need normally functioning memory processes and most of the mental phenomena can get an understandable though metaphorical explanation through our concepts and memory representations. Thus the human mental can be a natural and realistic object of memory research and introspective ponderings. If the research of consciousness is aiming at explanation of the emergent transformation processes in our brains while the afferent action potentials are interpreted as our experiences and in which our thoughts are transformed into the efferent action potentials steering our speech and other motor actions we still have to wait some hundreds of years.

In the RA-model, consciousness refers to a mental state in which the individual's processes of sensory memory, attention, sensation, perception, and knowing function normally. The subject is then able to perceive, know, and understand the objects, changes, and happenings in one's environment. Consciousness is thus closely related with the mental state of knowing. This relationship is clearly shown in the Finnish terms referring to these states. Consciousness is 'tietoisuus' in Finnis. This term is derived from the term 'tieto' = knowledge. Thus, the Finnish terminology connects consciousness to knowledge. The same connections can be found in English, if we go back to Latin etymology of the terms. As I mentioned earlier, the English terms consciousness and knowledge can be related by remembering that knowledge is a mental state in which one finds the meanings of the object of attention through the process of **concept-based** experiencing. Thus, consciousness can be defined as the **'concept-basedness'** of one's mental state. Concept-basedness is a mental state, in which you know and, for example, name, classify, and understand the meanings of the perceived objects of attention. This happens through the recalled and situation relevant attributes describing the important features of the object.

Of course, this mental state presumes that your brain system is working normally and you are not experiencing illusions or hallucinations. In the RA-model, this means that both the on-line stream and the memory-line function and bring the proper set of concepts and their attributes into one's SCES or mind to explain the sensed objects. If the memory-line does not function properly, as in many cases of Alzheimer disease, one can be aware of one's environment through sensations but does not understand the sensed. In the previous chapters, I have outlined the degrees of consciousness from pre-awareness of our sensory memory or the mental primitives, awareness of sensations or of the mental atoms, and consciousness of our concept-based perceptions, which is thus leading to the mental state of knowing. Concept-based perceptions function as our mental molecules, which are usually built of many concepts, which in turn can consist of many combinations of mental atoms or sense based and structural attributes describing the different features of the object.

6.8.2 Dennet's Consciousness Model

Daniel C. Dennett's book Consciousness Explained (1991) had this very promising name. However, Dennett's search for naturalized explanation of consciousness via his Multiple Drafts model in this book ends - as Dahlbom (1993/1995) finds out - "with the declaration that our attempts to understand consciousness is a search for illuminating metaphors". Antti Revonsuo in his dissertation work (1995) sees that Dennett's (1991, 1992) Multi Drafts Model does not give any explanation to the core-problem of consciousness. Dennett himself notes in his Consciousness Explained on pages 454 and 455 that he has not managed to explain consciousness with something unconscious. He has only presented a new set of metaphors instead of the Cartesian Theatre with its central material locus in pineal gland. However, he sees that our metaphors are our tools for thinking. From that we could infer that better metaphors lead to better thinking.

Dennett seems to confuse our awareness of sensations and our conscious perceptions. Our perceptions are based on situation relevant set of concepts and their attributes, which build us the understood experiences of the sensed. Dennett spends lots of pages to postulate Orwellian and Stalinesque demons to make the Φ-phenomenon understood. Kohler's colour Φ-phenomenon (Koehler and von Grűnau 1976, p. 330) manifests when two round green and red spots seem to jump and change their colour during the jump from one spot to other. This seems to happen though there are in reality two different spots lighted alternately and staying

in two different positions. In the RA-model our conscious perceptions are triggered by the sensory attributes of an entity and our brains produce us an understandable visual or audible explanation of the sensed. The colour Φ-phenomenon can be understood by the normal processual phases we have in all of our perceptions. In the evolutionary processes a running or flying prey has changed colour when being in the sunlight or in the shadow or behind of trees. For our brains a moving and colour changing entity is the most natural explanation of the sensed. Consciousness is also the most natural mental state caused by the on-line dorsal and the memory-line ventral streams of processing the encoded visual information. I am assuming the analogical double streams are in use in all sensory channels. It can be studied scientifically by the cognitive memory research. The research of the transformations from the material afferent action potentials to the mental and vice versa into efferent action potentials is another area of future brain research. It may take some time before the material bases of these ontological transformations are really understood.

6.9 Can Philosophy be naturalized through Memory Research?

As seen through the above examples, the RA-model seems to be able to give new points of view to some of the age-old problems of philosophy. The postulated and testable structures and functions of our concepts, memory representations, and our scene of experiencing and steering are able to produce a naturalistic psychological descriptions and explanation of many philosophical problems. The more we get testable knowledge of the structures and functions of our mental dimensions and their connections with the processes of our central nervous system, the better the models of the mental can be developed. The structure of our mental atoms conveying the meanings of entities can probably be adjusted with the results of brain research and neuropsychology. The same concerns the model of the scene of experiencing and steering, which serves as the mental space for our experiences. The structures and functions of our working memory seem to be bound with the structures and functions of our brains' neuronal nets and their system effects. When we learn to understand them better, we possibly learn to comprehend more fully also the human mental. However, as explained above, even all empirical research come on the boarder of the known and unknown and then you need the philosophical contemplations and metaphors about the necessary presumptions and postulations to form hypotheses, which then can be tested.

7 RA'S SELF, I, AND ACTION REVIEWED

7.1 RA's I, Me, Self, Identity, and Personality

Before reviewing the first intuitive definition of this study, the definition of human action, I am going to recall briefly the used conceptions of man as a rational actor and the different features of his agency. As explained earlier RA's agency is based on his value-based long-term thinking, goal-oriented planning and decision-making, and situation relevant use of available resources in implementations of plans. In the RA-model **I** is an actor who can form an image of his environment and him-self only by using the memory representations of them as tools and objects of attention. To speak about **Self and Me** means, in fact, that there is an actor, I, who observes him-self and as the results of these findings forms an image of him-self and his material and mental dimensions and other qualities. **Person** and **personality** are terms whose referents are individual actors with their special mental and biological features and behaviour models, often as seen by others. The contents of them are built of their views of the world, their roles, resources, situation relevant actions and reaction, and the achievements and successes through these actions. Individual's personality manifest for others through their actions and interactions.

In the RA-model, **self, person, personality, and I** are implicitly in the contents of chapters two, three, and four. I am not going to discuss these theories here but want just to mention that they can be seen as dimensions of RA's agency. Carl Roger's personality theory and William James' I-self and Me-self can easily be understood against the RA's meta-model of mans mental structures and functions. When RA plans and makes decisions by using his SCES and its frames formed by his world-, resource-, role-, and situation-and action views, he, in fact, sees himself as an actor and individual person in a certain situation with the abilities and resources which are in his position or otherwise usable. His conceptions of his roles, resources, and practical know-haws as an actor form the main areas of his self-image and identity as explained in chapter 4 and Figures 4.1 to 4.5. Our self-image is then also a product of our brains memory functions and our abilities to use them as tools in our mental operations. Successes in one's endeavours create the feeling of a good control of oneself and one's relations and exchanges with the other actors. These successes function as feedbacks and form an important part of our conception of what we can and what we really are.

7.2 The Main Dimensions of Human Actions

Human actor and his actions form a huge object of research and it can be approached by a multitude of the human sciences and from their different points of view. In its totality, this study has been aiming at a preliminary outlining of the mental steering system of an individual's actions. I see it central, because even in organisations and communities the individual actors are the decision makers who determine what resources are used and how these resources are used in a certain situation relevant action. In this chapter, I am returning to the first intuitive definition. I am trying to deepen the intuitive definitions of actor and his actions in Chapter 1. The intuitive definition of action gave the original impulse to the other intuitive definitions of this study. Instead of going deeply in the processes of all the elements of human actions, I am going to review briefly the concept of action. This can be seen as an embryo of a psychological theory of the human action. It can possibly be used as basis for a wider research of human actions. Going through the system structure of the concept of action offers at the same time a brief repetition of the main issues of this study.

The idea, in Chapter 1, was to see human action as goal oriented use of resources **steered** by actor's mental planning and decision-making activities. This definition initiated the work that lead to the postulations of the system structures of human concepts and human steering system with its SCES as a memory-based model of human mind. The universal features of these basic elements of human mental in turn offered new tools to analyse the other intuitive definitions and some of the eternal psychological and philosophical problems, which was done in Chapters 5 and 6. These tools enabled the analysis of actor's knowledge, motivation, and the mental dimensions of organisational culture like values, norms, and language.

The above elements seemed to play the central role when trying to understand the human mental and human actors as individual decision makers and as members of different types of organisations and communities. The RA-model seems to show that man as an individual is a mentally steered biological and social actor, whose rationality is based on his personal value-, norm-, knowledge- and skill-bases formed during his ontogenic history. These bases and stores offer individuals, in most case, a situation relevant set of mental tools for different applications although they are under a continuous and dynamic change and development process.

7.3 The Base-and Value-line of Action

In what follows, I shall make an analysis of the concept of action by using the system model of memory representations and concepts, which I illustrated in Figure 3.1 in Chapter 3. I am going to use the steering factors of action, which I described in the situation and action view in Figure 4.4, in chapter 4. The model in Figure 4.4 explains the main planning elements of an individual working on his own or his community's or organisation's strategic and operational plans of future actions. Of course, the contents of the elements vary greatly depending on the level of action. If the elements are seen as areas of an individual's mental operations, we are studying his adaptation process to the changing situations in everyday life. On the level of an organisation, the process consists of large number of specialists collecting and analysing the information connected with the different areas of planning and decision-making. As mentioned earlier the decision-maker is always an individual, which justifies to review action and its steering processes here from an individual's point of view.

<table>
<tr><th>The Time Line</th><th colspan="3">The Base and Value Line</th><th>The Theory Line</th></tr>
<tr><td>FUTURE STATE
The expected, valued, and possible state of affairs achieveable by the planned actions forms a motivating future state in actors thinking. The degree of probability of succesful implementation plays a central role in actor's decicion-making</td><td colspan="3">VALUE & MEANING
The value and meaning of an action is defined by its ability to achieve the set goals and create resources for subject's actual and future actions & processes</td><td>FUNCTIONS
Actions are necessary conditions for all actors' survival and well-being. They aim at achieving situation relevant results and fulfillment of subject's goal settings with rational use of available resources</td></tr>
<tr><td rowspan="3">PRESENT STATE
The experienced situation descriptions are based on a combination of information encoded by different senses and interpreted by the recalled set of memory representations of the expected state of affairs</td><td>MOTOR</td><td>SITUATIONS & ACTIONS</td><td>AUDITORY</td><td rowspan="3">STRUCTURES
Driving a car is materialy manifesting and mentally steered action. Thinking, planning, and problem solving are mainly mental actions whose resources are based on actor's creative powers and his world-, role-, resource-, situation-, and action-views.</td></tr>
<tr><td>TACTILE</td><td>ACTION and its linguistic descriptions</td><td>VISUAL</td></tr>
<tr><td>GUSTATORY</td><td>CHANGES & REACTIONS</td><td>OLFACTORY</td></tr>
<tr><td>GENESIS
Actions often get their beginning through the need to achieve a valued state of affairs. It can be a reflex-like response to a sudden change in actors' environment or a set of results of creative problem solving</td><td colspan="3">CLASSES OF ACTIONS
Actions can be successes, failures, or disasters of their results. They can be reflexive, automatic, model-steered, creative, communicative, etc. by their nature. They can cause good or bad results, but they are always goal oriented use of actor's mental and material resources.</td><td>SUBSTANCE & ONTOLOGY
The basic substance of action consists of its mentally subsisting steering and controlling elements and its materially existing and manifesting features. Even in our thinking and concept forming need the electrochemical processes in our brains' neuronal nets.</td></tr>
</table>

Figure 7.1 The System Structure of Human Action

Figure 7.1 on the previous page offers a condensed delineation of the main elements of the concept and theory of action. I shall use it and its base-, time-, and theory-lines to recall briefly the main ideas of the substance of the action of a human individual who usually is member of several communities and organisations. I shall use the elements of the situation and action view to examine some areas of the concept's lines. Thus, the actor is seen to be bound in his actions to the values, norms, duties, and rights, which are elements of the roles he is given by those communities of which he is a member. The system model of concept is a way to integrate the mental and material features of the human action. I see it as a useful tool when researching the human actions in organisations.

As seen in Chapters 5 and 6, the RA-models of the human concept and steering system offers a natural explanation to some of psychological and philosophical problems, which are always present in the practical managerial work in organisations and in the research work practiced in the human sciences. These models enable us also to review some of the psychological features of the strategical management. Even if strategy is mostly seen on the level of the whole organisation, the strategic thinker and planner is always an individual who makes the decisions. If strategy is seen as a set of decisions and principles guiding all the interactional operations between individuals or organisations and their environments, so every individual is a planner and maker of his own strategical decisions. In an organisation, these decisions are based on the information, which often is compiled by a large number of specialist groups gathering, analysing, classifying, and storing all the situation relevant knowledge, which is seen as necessary to solve the actual problems and to select the assumedly successful direction of operations. Still the decision maker is an individual, whose mental world must cover the total picture of the different factors. A set of proper models can make this complicated task somewhat easier.

7.3.1 The Value-Attributes of Human Action

The upper square on the Base- and Value-line of the concept of action refers to values of human actions. As assumed in the basics of this study Man is an actor, whose survival and well being are totally depending on his abilities and possibilities to react and interact in situation relevant way in the changing environment. As shown earlier RA's ability to act depends on the availability of situation relevant mental and material resources. The resource

features of entities are so central for RA's survival and well being that RA seems to see all his values through this resource grid. Entities, which do not have any use in the foreseen future, have hardly any value for RA. Actions in turn get their values through the achieved results and through their potential abilities to be or to create resources for actual and future actions. The ability and freedom to act along with one's own preferences is often experienced as one of the main values in human life. Freedom was one of the three values of the French revolution. Even the two other values have their connections to resources. Brotherhood refers to social resources and equality to individuals' rights to get the same treatment or the same portion of the common goods as all the other members of one's communities.

7.3.2 The Sensory Attributes of RA's Actions

The central square on the base- and value-line of RA's actions consists of nine elements. There are six areas of descriptions, which we get 'directly' through the on-line connections offered by our senses and the sensational interpretations of the sense-encoded afferent action potentials. These interpretations are our sensations, which vary from visual, auditory, olfactory, gustatory, and tactile to motor descriptions of the objects of our attention. In the middle square is the name of the action and linguistic descriptions of the seen and experienced. These descriptions may be used or expressed by other actors and heard by the subject. They may also be created by the subject's inner speech actions explaining the experienced. Thus, we can see how the linguistic expressions form a natural part of the sense-based descriptions of the set of observable episodes and happenings stored as the sensed of the experienced. Thus, linguistic expressions function as ostensive definitions of entities. The same concerns the observed changes and actor's own and other's reactions to it. They get also situation relevant linguistic descriptions in their memory representations.

The situation and action view, in Figure 4.4, offers the model to review the mental explanations we recall when observing the events and happenings in our environments. We try to understand the seen actors and their doings by recalling their backgrounds, world-views, the roles and goals they possibly have taken, and the other situational factors. Thus, all our perceptions of the elements of an action are 'theory-laden' as mentioned earlier. We live through the sensed via the situational views we recall.

The situation and action model was briefly discussed in Chapter 4. I have used it as material in my seminars connected with OD-programs in organisations. It is a total frame of pragmatic

strategic and operational planning systems. The problems and tasks it is addressing are the same also on the individual level, though the resources to work on each of them are very different when working on the level of an organisation. When planning our speech or other actions we have to observe the situation and its threats and opportunities, our role and resources, the roles of other participants and their resources before deciding about the goals and the actions we are going to perform.

7.3.3 The Classifying Attributes of Action

RA's own actions, actions of others, as well as all interactions with other actors in his environment are classified by furnishing their memory representations or concepts with classifying attributes describing their qualities and meanings to the subject in different situations. As explained earlier, actions and actors are good if and only if they bring about an increase or advancement of subject's or his communities' material and/mental resources. They are bad if they cause a decrease or destroy subject's and his communities' resources. Rational actors seem to be consequence-oriented in their ethical and moral classifications. The other set of criteria for classifying actions is based on their rationality and success of reaching the aimed goal state of affairs. Actions can be classified also by the system they are steered. On the scene of experiencing and steering - Figure 4.5 in Chapter 4 - the steering of RA's actions are divided on four main levels starting from the reflexive level of steering and ascending through the model use and model creating levels to the fourth level where the basic values and principles are sometimes put under a change pondering.

7.4 The Time-line of Action

7.4.1 The Genesis and History of Action

Already Aristotle said about action and its origin: "The origin of action - its efficient, not its final cause - is choice and that choice is desire and reasoning with a view to an end" (Aristotle 1980 p.139). This sentence consists of the same main elements of the steering of action, which form the contents of the time-line of human action. There are the goal, planning, and decision-making, which are the mental elements of any action. Aristotle continues: "This is why choice cannot exist either without reason or without a moral state" According Aristotle,

action is always aiming at something good, be it the product of the action or the action itself. This point of view of action brings the ethical points of view to any action, because actions are also seen as interactions and exchanges between members of the producing or performing community and its environment. Thus, the values and moral rules valid in the community or society have or should have their steering effects on human actor's operations and behaviour. There are always dissidents who have not adopted – or even never taught - the values and norms of the community.

Planning is the human method to move on the time-line of actions. As explained earlier, the present is seen through the experienced history and the hoped future. The pragmatic rules of causality or the experienced consequences of our doings guide our thinking and actions. The if- then-logic is everyman's logic in planning one's actions. Often our actions get their genesis and timing via the daily, weekly, and annual programmes to which we have committed ourselves. The other group of initiators are our needs based on the lack of metabolic or mental balance. The anticipated end-states of actions function often as the initiators and motivators of our activities.

7.4.2 The Present of Action

The present is in fact a moment between the history and the hoped or planned state of affairs in the future. The situation analysis consists, besides the state of affairs, as they are perceived, of the assumed actions and reactions of the other actors to the prevailing situation and its changes. The available resources and possibilities of their use and control are the defining factors when deciding over the execution of any action. Thus, it is easy to understand, why the ready-made models of action are used whenever there are any situation relevant ones available as explained in Chapter 4.

7.4.3 The Future achieved by Action

The planned future state affairs of individuals are based on their values. As explained earlier, human actors are value-oriented. When RA's values are formed by the real or thought resource features of entities, rational actors seem to be resource oriented in their value settings. As explained earlier, even the deeply spiritual and religious values seem to serve us

as resource factors of the entities we have postulated in our mental through the beliefs and doctrines to which we have been exposed during our ontogenic histories. The humans seem to be model-learners and adapters both on the bodily and on the mental areas of actions.

7.5 The Theory-line of Action

7.5.1 The Substance of Action

As all concepts, also the concept of action has on its theory-line brief descriptions of the ontological status of action and descriptions of its structure and functions. The virtual dualism of action is unobservable when its mental steering system is hidden behind the materially manifesting performances, which can be, for example, different kinds and combinations of speech or other motor action. Thinking, planning, and decision-making are examples of purely mental actions. Even they have their material base in the processes of our brains' neuronal nets and in the lasting changes in their molecular structures. Thus, both the mental and material elements of the steering processes are always present in all structural and functional features of actions, which I shall briefly describe in what follows.

7.5.2 The Structure of Action

In this chapter, I have retuned to the intuitive definition of action, which was presented in the first introductive part of this study. The structure of the processes of action and activities - describing at the same time the functions of them - are combined of the following three processes, which consists of:

- Processes of goal seeking and defining,
- Implementation, and
- Utilization of results

These processes are formed of the mental and also of the materially manifesting tools and equipment as elements and bodily performances of actions.

The processes of goal seeking and defining process consists of the conscious and/or tacit mental steering processes of the actor's brain-system ensuring the situation relevant executions of the actions. This process in turn is combined of subprocesses of information collecting, checking, and storing, another process of planning, decision-making, and controlling with their systems and techniques. In these activities one needs the third process of steering. This process consists of the interactions between the actor and his environment. It is leading to the exchange of material and/or information. These exchanges form also the feedback tools, which can, if properly used, formulate the organisational culture with its values, norms, and language.

This brief analysis of the definition of the main elements of action, have proved to be a useful aid in all the management-consulting assignments in which I have been participating. I am assuming that these elements of action can be found on all levels of action hierarchy from strategic planning to the execution of the simplest repetitive routine performances on the shop floor level of a production line or on the interactions in the service business. Of course, the goals, resources, and the system of steering varies considerably when moving from level to another, but these basic invariances of goals and steered use of resources can always be found. In this study, I have concentrated on the problem of steering or directing and on the role of individual's knowledge, values, and language in it. I have thus limited the object of my research on those items, which really are connected with the directing of individual's actions. I am seeing man as a rational actor, RA, though his rationality may sometimes look rather limited.

The RA-model with models of human concepts and mind enables us to review Man's actions and their steerability from new point of view. In Chapter 5, I have explained how human knowledge, values, norms, motivation, and language are connected with human concepts. They form at the same time the mental dimensions of organisational culture. Concepts as recalled sets of our memory representations are the tools of which our mental processes create our states of knowing, feeling, choosing, etc. In Chapter 4 Figure 4.4, I presented an analysis of RA's situation based action orientation, in which I am using the system model of RA's concept as a basis. It illustrates the basic substance of Man showing that he is a mentally steered actor operating in the material world.

7.5.3 The Functions of Action

Man's survival and well being has always depended on his ability to plan and execute his action in a situation relevant way. His actions' situation relevancy is based on the analysis of the proper cases of his world-, role-, resource-, and potential action views before deciding how to proceed to solve the actual problem by a rational way. His situation analysis culminates in a SWOT-analysis, in which he the strengths, weaknesses, opportunities, and threats are scrutinized, when forming the options of a proper goal setting for the necessary actions. The decision of a valuable and possible goal is then steering the selections of resources the ways they are used and controlled, and ways the results are divided between the interest groups of the action.

The degree in which the above logic of steering is used in individuals' decision making varies extensively. A managing director in a big business company may have several groups of specialists collecting, analysing, organising the information, and explaining the ways it can be interpreted in changing situations when connected with the different areas of the above analysis of action. Still, he must make the decisions as an individual who is responsible and must consider the opportunities and threats of all of his choices.

As explained earlier, individual's ability to interpret the sensed information depends on his situation relevant concepts, which can be recalled to make the information understood and then form a part of his knowledge base. Thus, individual's preparedness for decisions and actions is always at the mercy of one's knowledge base or the availability of situation relevant concepts to interpret the sensed information. The problem of steerability is then intimately connected with our concepts and our abilities to explain them in a situation relevant way. The steering mental powers seem to be created and maintained by the resource features of the goal states of affairs. Thus the value attributes of entities steer our motivational states and their durability. Another steering effect comes - as explained earlier - from the adopted norms of individuals. Human actions are then value oriented and norm controlled use of available resources to achieve the planned goals.

8 THE RA-MODEL'S USABILITY IN HUMAN SCIENCES

The original idea when I built the RA-model was to find the mental core features of the human action, knowledge, motivation, and organisational culture. The common core was found in the memory-based and situation relevant structures and functions of concepts. As seen in the previous they opened a new way to view the above eternal questions of psychology, philosophy, and managerial development work. Besides these questions I had to use the RA-model to examine the concepts of values, norms, and language, which I found to form the main mental dimensions of organisational and all human cultures. The basic features of RA-model are 'universal' in the sense that the problems and theories connected with the human mental dimensions can be approached by using it. The research-strategy in the RA-model is, in fact, based on two principles:

1. In the fact-based RA-model the problems of two postulated transformations from the material into the mental and vice versa are seen to be out of the scope of this study. I have left their solutions to the future researchers of the human brain, neurophysiology, and neuropsychology. These areas of research may little by little open the secrecies of how the experienced or the phenomenal world is created by our central and peripheral nervous systems. Examples of these are the findings of the dorsal and ventral streams and the mirror neurons as told previously. The more we know what the causal effects of the neurotransmitters and other chemicals and the system effects in our neuronal systems the better we can explain how our experiencings are processed. But this does not wipe out the necessity of understanding the phenomenal, which always will be based on structures and functions of our memory representations.

2. The problems of the human mental can be based on empirical research by systematic analysis of the results of the memory research and our abilities to conscious introspection. If we believe in the basic assumption that our mental states steer our actions, memory research will - even in the future - be the main area of the rational research of the human mentally steered actions.

With these limitations the RA-model could be applied to quite many of the age-old problems of psychology, philosophy, and managerial development work. Discussions with my reviewers, professors Ilkka Niiniluoto and Göte Nyman lead the trial of using the RA-model to the concept of truth and an enlarged handling of the concept of action, which I have done in Chapters 6 and 7. Their suggestions caused also a trial to handle the concepts of free will, emotion, learning, and perception of space, which implicitly are present in the content of the model but are mentioned only en passant in the previous. Though these items are not on the core area of my study these discussions led to a short pondering of the differences of the RA-model and some other total models of man. In what follows I shall limit to describe how these problems can be seen through the RA-model as a meta-model of human mind.

8.1 Sensation, Qualia, Perception, and Consciousness

In the RA-model the above terms refer to a natural chain of mental processes at end of which we become conscious of the object of attention. As explained earlier this process gets its genesis by the attention process, which selects the situation relevant items of the sensory memory to be developed in concept-based, and then conscious mental state of perception. During or after the moments the processes take place in our central nervous system we live through a set of subjective experiencings, of which most can be named along with the customs in the communities one has adapted one's linguistic expressions. Colors, pains, situations, actions, interactions, emotions, feelings etc. get the names and linguistic expressions from the common experiences in the culture in which one lives.

In the RA-model **qualia** is seen as subjective living through the experiences, which are caused by the primary interpretation of the sensory information of subject's object of attention. It is a natural, but short-lived phase in each process of perception. It can be seen also as the quality of experienced mental state or mood. Our brain's concept-based interpretations of the object of attention are then our conscious perceptions. All perceptions, the perceiving the space, are based on the recalled concepts. The cues in the sensed form the set of search attributes and define the concept-based interpretation of the sensed. Misleading cues in the available sensory information form most, if not all, of our illusions.

As explained in section 6.8 **consciousness** is seen as a natural end phase in all processes of perception. It is a mental state of knowing and understanding. It is concept-basedness in

experiencing. This consists of all the qualities, levels, durations, and degrees of intensities and prosessuality of experiencings. These mental states are based on the situation relevant set of concepts and their attributes.

If the brain researchers solve the problem the two transformations, we may know better how our brains as a totality functions and organise the system effects of the 110 billion neurons to enable our mental experiences. But the processes in our brains are not our experiences. Human beings represent the only species of actors who can report their experiences through their introspective abilities. Concept-basedness seems to be good explanation for the mental states, which have been called consciousness.

8.2 The RA-model, Behaviourism, Cognitive Science.

RA's universe and world are formed of material and mental entities. The human and some other actors have - through the evolutionary processes - highly developed nervous systems. These systems enable actors to experience different kinds of mental states and perform mental and mentally steered bodily actions. These mental states and actions have causal relations with actors' environment through their materially manifesting speech and other motor actions. As presented in Figures 2.1 to 2.3 in Chapter 2, actors' brains create the experienced world and its steering effects by two transformations between the material and the mental.

Behaviourism denies the existence of the human mental and tries to explain human actions and interactions through mechanical responses to the situations and changes in subject's environment. In the RA-model - see Figure 4.5 on page 108 - both behaviouristic and cognitive approaches into the human mind and action can be understood. As discussed in Chapter 4 RA's scene of experiencing and steering consists of levels and areas of steering and its division between the conscious and processual steering of actions.

On the reflexive and model level of steering the processual element of steering is in the main role, which is often assumed in behaviouristic explanations. 'Ready-made' or learned models make acting easy and fast especially when they are formed on the level of automaticity. It is just rational to use the situation relevant models if they have been built already. In new situations RA uses his creativity and plans his action according to the values, goals, and resources, which are actual and available in the situation.

The RA-model seems to be flexible. Through it the different schools in psychology and philosophy and their views of man's mind and thinking can be understood. If cognitive science is seen as a multi-disciplinary approach to human mind and thinking so RA-model should serve also its purposes. The RA-model explains through its model of human concepts how our linguistic abilities are natural functions of structures of our concepts. The linguistic attributes of our concepts and views of the entities of the being form the bases for communicative actions.

In the RA-model I have I am not using the computer metaphor of the human brains and its abilities to the emergent transformations from material into the mental and vice versa. **Search attribute** is the only terminological similarity referring to computer science. RA's sensations are assumed to function as search attributes to recall into the working memory the situation relevant set concepts and their attributes to explain the meanings of the sensed. The main idea has been to base the research of the human mental on the empirical memory research. As seen some basic results of brain research and neuropsychology has been used. The functions of the dorsal and ventral streams and the mirror neurons have been mentioned earlier of these connections.

I have left the problems of our brains structures and functions behind the emergent and steering-effect transformations as explained earlier. These transformations form the **interfaces** between the material and mental in human actions and thinking. To find out how our brain system performs them may take some time of the brain researchers. The base in the RA-model has been the functioning postulations of the cognitive psychology with its working memory, long-term memory, episodic memory, etc. as explained in Chapters 2 and 3. Our mental world can through these postulations be based on empirical research and they can be understood even by our introspective abilities. It is hard to see how the human mental could be explained without our memory representations and their structures and functions. Only functioning memory systems can do the emergent and steering transformations between the material and mental.

8.3 RA-model's Cognition, Emotion, and Free Will

As seen in Chapter 4 RA's mental states are caused by the actual situation view and the set of recalled concepts. The areas, levels, intensities, and durations of experiencings can vary in large scale. In well known situations actors usually concentrate to items connected with the

goal towards which one is aiming at. However, the areas of experiencings need not to be sharply differentiated. The cognitive, emotional, volitive, motivational, and other features can be present at the same time. If the sensory or other cues of the object of attention recall concepts and memory representations of a familiar and known entity actor can focus on the situation relevant features of it.

The value attributes of the object entity steer the better part of the emotional reactions. If the object were a bear walking towards you on your forest path your reactions would be a lot more emotionally oriented than when meeting a car in a street corner. Emotional experiences are often in the main role when something new and unknown occurs. Is the unknown friend or enemy, preyer or prey, is the question in your mind. In the evolutionary processes this readiness for emotional reactions has evolved because the supposed prey has often avoided to be eaten and his genes have continued their steering effects in new generations. The modern man seems still to have similar features in his behaviour models. Emotional elements such as joy, love, happiness, delight, satisfaction, sorrow, disappointment, grief, sadness, regret are often present in our everyday life. In their background we can often find the value attributes or their real or speculated changes of the object of attention. An unknown entity does not have any value attributes and then it forms question marks and can mean a hiding danger.

RA's SCES or his scene of experiencing and steering consists elements for cognitions and emotions as well as for volitions and motivations. Our needs, wants, and conscious decisions are based on the value attributes of the planned goal state of affairs. Emotions are - the Latin emovere = mover - our motivating powers and then with in all our actions. Emotions form often the first experienced ideas of the directions of our actions. Is our will free if the processual elements of our steering system trigger also the volitive elements of our actions? This question of the freedom of will is one of the eternal questions in the history of human thought. In the RA-model will can be seen as the as the balance between the processual and conscious steering. The human will manifests in the RA-model as one quality of the mental state. It is the state in which the acting individual chooses between the options he has been able to form. These options may concern the goal and resources of the planned action or the ways of using the resources when implementing the plan. The options may concern also the ways to use the achieved end results of the planned action.

The essential question when discussing about the freedom of actor's will or the quality of his mental state when he is forming the options and then when he is choosing the factors in his criteria matrix guiding his decisions. In conventional situations we are guided by the values

and norms belonging to the roles we have achieved in the communities or organisations in which we are acting members. The same values and norms are limiting our freedom both in forming the options and in choosing between the options.

The degrees of freedom of actors will are implicitly in Figure 4.5 on page 108. The SCES or RA's scene of experiencing and steering shows that on the reflexive level we are steered by phylogenically formed nervous system. On the model level of steering we are steered by the models we have adopted from our environments during our ontogenic histories. These models can, of course, be consciously planned and tested but very often they are just adopted by the help of our mirror neurons or by other imitating powers like the will to follow the appreciated mode or fashion. On the third level of steering when building the models of acting one could think the actors have more freedom. The decisions on this level concern the choosing of the ways actors want to act or to form the goal settings of their actions. In fact, even here our basic values and norms form the limiting factors for our will and decision-making.

The fourth level in Figure 4.5 is the level on which individuals could possibly consciously build the dimensions of their personality and the core self. This could happen by personal growth to the level of self consciousness that the selecting of the basic values and the basic principles can happen after conscious planning and choosing processes and decision-making. On this level we could possibly reach in our mental growth to the level of 'progressive mentality' of Zarathushtra on which our values, norms, and basic ideas could lead to beneficial consequences and to good life of our fellowmen and ourselves. As mentioned earlier a good deed for RA is a deed in which all participating resources are used in balanced exchange with their owners and which leads to growth of the resources of all members of the participating communities or perhaps of all inhabitants in our Globe.

As seen in Chapters 3 and 4 our values are formed mostly processually in the interactions with other actors in the communities we have spent our ontogenic histories. The answer to the problem of free will depends on our ability to advance and grow to the conscious level of analysing and choosing our basic values and principles guiding our everyday decision-making. Even here the laws and regulations valid in our communities limit our freedom. Anyhow we can say that the degree of freedom is highest when we analyse and select the basic matrix for our decisions by conscious choosing of our basic values, norms, and our guiding principles. If we can do it, we have freedom of deciding along with them; if not, we stay on the level of mode and fashion followers where the masses of the human kind seem continuously to stay.

8.4 The RA-model and Learning

Each school of psychology and pedagogy have their theories of learning. Instead of describing the special features of behaviouristic or constructivist approaches to learning I shall shortly explain how the meta-model of the human mind explains the human learning process. Both main schools of learning are partly right. The processual formation of our concepts and their value and other attributes explains the behaviouristic ideas of reward and punishment as tools of teaching and means of learning. Value attributes define how the meanings of entities are seen. The processual formation of values justifies to explaining the processes of learning to be mechanistic response to the feedbacks one gets. The structure of RA's concepts and the SCES in Chapters 3 and 4 shows that there are different levels of learning. The creative level of learning and acting is based on the total situation relevant view of object entity and its relations to the other factors and actors in the community in which one is living. Learning is a proces of constructing new concepts and their attributes, which form the basis of the enlarging knowledge base.

In the RA-model learning can be seen as a process of advancing learner's brain's ability to produce a situation relevant solutions either to cognitive control or manual skill problems. On the level of central and peripheral nervous system learning means that the exchange of information between the individual and his environment leads to the state of affairs in which the learners nervous system can produce a situation relevant flow of afferent and efferent action potentials to steer the needed sets of speech and other motor actions. This means that the learning process improves his skills to perform both new mental and bodily actions. Thus the results of learning process can manifest in enlarged knowledge base or betterment of bodily skills. We can enlarge our knowledge base by building and rebuilding our concepts with witch it is formed and controlled. Our skills are improved if the sets of efferent action potentials steering them are more situation relevant ones.

The RA-model of the human concepts with its time-, base-, and theory lines could serve any teacher and learner to catch the essential of new entities and items. A well-planned learning process leads to good control of the total system in which the elements belong. Similarly the new skills achieved by bodily exercises form an integrated part of individual's know-how and skill tools. Anyhow, we learn by doing both mental and bodily exercises. The Latin proverb still holds: 'Repetitio est Mater Studiorum'.

As told in Chapter 2 Ramachandran (2001) thinks that the mirror neurons, which were found by Rizzolatti and Arbib (1998), will play a central role in the new theories of learning. If learning is seen as a process of building concepts, the results of teaching might be better if the teachers and learners knew what the human concepts and their structures and functions are.

9 CONCLUSIONS

9.1 Facts behind the RA-model

As premises of this study I have used the beliefs that man is a creation of the evolutionary processes, which have formed his biological and mental features fitting to the changing environment. I believe also that the best explaining theories are approaching the situation relevant or truthlike descriptions of their research objects. I have used some results of cognitive psychology, neuropsychology and brain research, whose results offer a firm empirical ground for pondering the substance of the human mental. The dorsal- and ventral streams and the mirror neurons are examples of the findings of the on-line and memory-line interfaces between our central nervous system and our environment. This systemic interface consists also the two ontological transformations between the material and mental as explained in the previous. They form a set of psychological and **neurobiological facts** on which the RA-model is delineated in Chapter 2 and condensed in the Figure 2.1. These facts seem to open new views to the genesis of our mental world, learning, and the processes steering our actions.

9.2 Conquering the Mental through its Atoms

The main idea in study has been that the mental can be understood if we understand what its primitives and different elements are. As seen in Chapter 3 both the Latin and Finnish etymology of the term concept refer to its function. Concipere and 'käsittää' = means to comprehend and understand, to get or grasp into mental hold and control the sensed object. The system model of RA's concepts aims at solving the problem of comprehending and understanding by offering testable memory-based descriptions and explanations of the theoretical entities these terms seem to refer. The time-, value-, and theory-lines of the RA-model of concepts delineate and group the descriptions we usually remember of entities we know well. But we usually judge the sensed by those situation relevant descriptions, which we recall and of which we become conscious when they are present in our working memory. The situation relevantly recalled set of descriptions of the object entity is here seen as the concept of it. Often all we need is just the classifying or stereotyping attributes, which explain the

main features necessary in the situation. This shows the internal or evolutionary rationality of our brains functions; only situation relevant elements of our memory representations are recalled into conscious review to explain the sensed and form the mental state of perceiving and knowing.

In Chapter 4 I showed that individual's mind is built of his memory representations of the World, of his roles, resources, situations, actions, interactions, relations, etc. I named these theoretical entities views. Some of them I have described in figures 4.1 to 44 by using the main features on all the three time-, value-, and theory-lines of which the descriptions of them are formed. The hoped for and value descriptions of entities form an important element when trying to understand the human intentionality, motivation, and goal orientation. RA's mind is framed by the views and SCES - or his scene of experiencing and steering - forms its center. SCES is a mental space, where he lives through the experiences caused by the situation relevantly recalled concepts of the objects of attention. Thus our memory representations and their situation relevant use offers us a natural explanation ground for most of the mental phenomena we experience.

9.3 The main Contributions of this Study

The RA-model of man and his mental structures and functions can be seen just as a metaphorical description of how our peripheral and central nervous systems build our phenomenal worlds and their relevance with the reality. As stated earlier, if we believe in the evolutionary theory, we have to accept that the experienced descriptions in actors' minds are usually situation relevantly processed explanations of the sensed world and its changes. Most models and theories in human sciences and even in philosophy are connected with the problematic - but often unexplicated - transformation processes in our brain systems. These are formed of the emergent- and steering-effects between the material and mental worlds, in which the afferent and efferent action potentials are in the interfacing roles. Theories of memory, mind, role, emotion, qualia, knowledge, chunks, etc. can often be seen as metaphors illuminating the real brain processes enabling the human mental. Their function is to make the experienced descriptions of the world easier to understand. Our memory representations and concepts are functions of our ontogenic histories and then our concept-based experiences are individual and subjective though a varying degree of intersubjetivity is always formed between people living in the same communities and cultures. This is necessary for communicative and other interactions and exchanges between the members of them. The most universal in our experiences are those sensory attributes whose formation is based mainly on

our phylogenically defined structures. The naming of the sensed is, of course, a function of the culture in which one is living. Eskimos have many names for snow, which can have many different qualities depending on its temperature, crystal structure, humidity, etc.

The RA-model can be seen also as a trial to satisfy the many needs of human sciences and philosophy by proposing a universal model of human concepts and mind. The RA-model grounds them on testable and introspectively approachable memory representations of the entities of the being. As a meta-model of man's mental its basic features can be seen also as abducted from the findings of theories in psychology and other human sciences. As mentioned earlier, **abduction** can be seen as inferring from effects to causes. In the RA-model this happened by asking what the structures and functions of the human mental are or should be when their 'steering effects' manifest the observed way in the human actions and behaviour. Our brains' transforming emergent and steering-effects are processes, which may stay as an eternal, deeply cryptic, but always enchanting object of research; however, they manifest continuously in our everyday activities and are the real ones. To understand them we can only try to construct metaphorical models to help the forming a picture of the human mental. As a repetition of the discussions I had in Chapters 5, 6, and 7 I shall list following points of possible contributions of this study:

- The RA-model purports to bring up the main dimensions of the totality of man's real substance as a biological, social, and rational actor, whose survival and well being has been secured by the mentally planned and controlled goal oriented actions aiming at the valued actual or futures states of affairs.

- The RA-model's simple ontology and metaphorical descriptions of the basics of the human mental seem to offer understandable explanation grounds for quite many problematic questions in human sciences and new points of view to some of the eternal problems of philosophy.

- The testable realism of the **system-structure RA's memory representations and concepts'** offers a memory-based and partly by introspection achievable and understandable ground and tools for reviewing the human mental life.

- The system model of RA's concepts and memory representations as atoms and molecules of the human mental offers a commonly usable model of the human theory building processes. Though, as metaphors they may offer a ground for building useful and testable hypotheses for psychology and other human sciences.

- The **system-structure of RA's mind** as memory based steering construction - framed by individual's views of the World, of his roles, resources, situations, actions, etc. - shows the multi-dimensionality of the human experiencings caused by the recalled sets of views, concepts and their situation relevant attributes. This structure of human mind explains also the central position of the **situation relevancy** in all human mental and materially manifesting actions.

- The RA-model clarifies how our brains' sensory and memory streams of information processing creates the **double-phase process of perception.** It enables the subject's transfer from sensations to the concept-based multidimensional mental state of knowing. This means that the values and meanings of the objects of attention become conscious and have their effects on subject's cognitive, emotional, and volitive experiences and then on his thoughts, plans, decisions, and actions.

- As seen in the previous the double-phase perception process explains in a natural way our ability to perceive reliably entities in the three-dimensional world and most of the common illusions. Our brains build our perceptions always in the frames of the recalled situation views. The sensed or thought cues form the search attributes recalling the explaining set of concepts and their attributes to our working memory for conscious perceptions.

- The RA-model of human **knowledge** draws attention to the fact that knowledge is individual's concept based **mental state of understanding** the different meanings of the object of attention. Understanding is then a conscious mental state, which serves his conscious planning and decision-making concerning his actions. Often the mental state of knowing is initiated by the outer **materially manifesting** sensory **information,** which can be spoken or written linguistic expressions or other sign formations. The same information may cause greatly varying mental states of knowing depending on the situations and situation relevantly recalled concepts of the interpreting individual. That's why we so often make the question: What do you mean? This shows that our frame of reference or the recalled situation and action view has been inadequate.

- The RA-model of knowledge shows the necessity of understanding that the **ontological difference** between knowledge and information should be a matter of course to everyone. However, these terms are often used as synonyms. Though this faulty practice causes many problems in human communicative interactions, its change may be difficult to bring about.

- In the RA-model, **values** are seen as resource-describing attributes of entities in subjects' memory representations and concepts. This enables a natural explanation of values of both material and mental entities. Even the postulations of theoretical, religious, and spiritual entities and their values can be understood by the structure of RA's concepts and their value attributes.

- RA's values and situation orientation offer a natural explanation also of the human intentionality and goal orientation.

- In the RA-model the memory representations of **linguistic expressions** are seen as sensory attributes of memory representations of entities and situations in which they are used. This offers a natural explanation of our linguistic abilities. Nouns and verbs are name-attributes of entities' memory representations. Sentences are commonly used linguistic expressions to describe actions, changes, or different types of situations. Their memory representations are usable linguistic attributes in the recallable 'picture-like' views or memory representations of situations, actions, changes etc.

- Knowledge and truth, values and meanings, wants and motivations, thoughts and language, time and future, etc. are terms whose referents are theoretical entities. Some features of these have been analysed in this study by using the system model of RA's concepts as the basis. They seem to get an understandable explanation through the causally effective human concepts and their attributes. Thus the memory-based mental of man seems to form a necessary but often also sufficient base for the sciences aiming to increase the understanding of the human actions and behaviour.

Thus, I see the RA-model of man and his mental just as a simple trial to delineate a natural and 'total' picture of man. Of course, all of its elements should be researched in detail taking into account all of the earlier scientific results. However, this trial to build a total view of man seems to be useful even it is lacking and even faulty in many detailed features. I have drawn this interim view of man hoping that it will provoke a fruitful discussion about the possibility of a **universal base** for understanding the mental features of the materially manifesting corporal man and its base in our central and peripheral nervous systems. The main message of this study is to show that the different human sciences and philosophies can have only one and the same mental grounds in the testable and introspectively experienceable human memory representations and concepts. As seen in the previous they seem to create the experiential world we live through in our minds. Thus the search for the primitives, atoms,

and molecule of the human mental might be useful and worth-wile investment for the human sciences. I hope that this study is a positive input to the endeavours trying to find the real mental grounds from the processes, which our central nervous systems offer us to steer our actions and interactions with our environments.

9.4 The RA-model and my Future Research Interests

The RA-model as a memory-based metamodel of the human mind and concepts seems to offer a useful set of tools to approach the human being as a totality formed of material and mental elements. Its applicability to help in forming hypothesis of the human mental for their experimental testing by memory and brain research is a big question mark. My own interest is to research the RA-model's usefulness in trials to clarify the importance to see differences of the mental and material dimensions of man in all human sciences connected with the problems of human oriented management and its philosophy. The main issues I am going to study are found under the following three problem areas, whose preliminary titles are:

1. RA-model's applicability to open a new kind of discussions of the problems in psychology, philosophy, and in other human sciences.

2. RA-model's applicability renew the conception of the dirigibility of man and his goal orientated actions

3. RA-model's applicability to reveal the mental dimensions of organisational culture and their use as managerial tools

These themes have as their common issue the importance of seeing the mental dimensions of man. I hope that my future research and development work of the RA-model creates possibilities to apply the RA-model of man as a tool in developing research strategies in human sciences and in the studies of managerial thinking and practices in organisations.

REFERENCES

1. Ahlman, E. (1920 / 1967) Arvojen ja välineiden maailma: Eettis-idealistinen maailmantarkastelukoe. Porvoo: WSOY.
2. Alanen, Hyypiä, Järvilehto, Sintonen (eds) (2003) Lääketiede ja tieteenteoria. Turku: KirjaAurora.
3. Alderfer, C. P. (1972) Existence, Relatedness, and Growth: human needs in organisational settings. London, New York: The Free Press.
4. Allardt, E., Littunen, Y. (1964) Sosiologia. Porvoo: WSOY.
5. Allardt, E. (1976) Hyvinvoinnin ulottuvuuksia. Porvoo: WSOY.
6. Allwood, J., Andersson, L-G., Dahl, Ö. (1980) Logiikka ja kieli. Helsinki: Gaudeamus.
7. Allwood, J. (1995) Gothenburg Papers in Theoretical Linguistics: An Activity Based Approach to Pragmatics. Gothenburg: University of Göteborg.
8. Aydede, Murat; "The Language of Thought Hypothesis", The Stanford Encyclopedia of Philosophy (Fall 2002 Edition), Edward N. Zalta (ed.), URL = http://plato.stanford.edu/archives/fall2002/entries/language-thought/
9. Ayer, A. J. (1936, 1990) Language, Truth and Logic. St Ives: Penguin Books.
10. Ayer, A. J. (1984) Philosophy in the Twentieth Century. New York: Random House, Inc.
11. Baddeley, A. (1997) Human Memory: Theory and Practice. Hove, UK: Psychology Press.
12. Bankov, K. (2000) Intellectual Effort and Linguistic Work: Semiotic and Hermeneutic Aspects of the Philosophy of Bergson. Imatra: Acta Semiotica Fennica IX.
13. Bandura, A. (1986) Social Foundations of Thought and Action: A Social Cognitive Theory. Englewood, N.J.: Prentice Hall.
14. Beakley, B., Ludlow, P. (eds) (1994) The Philosophy of Mind: Classical Problems, Contemporary Issues
15. Bem, S. and de Jong, H. L. (1997) Theoretical Issues in Psychology. London: Sage.
16. Berger, P., Luckmann, T. (1979) The Social Construction of Reality. Norwich: Peregrine Books.
17. Blackmore, C., Greenfield S. (eds) (1989) Mindwave: Thoughts on Intelligence, Identity, and Consciousness. Oxford: Basil Blackwell Ltd.
18. Bohm, D. (2002) Wholeness and the Implicate Order. London: Routledge.
19. Brockman, J. (ed.) (1990) Speculations. London: Prentice Hall Press.
20. Broms, H., Kaufmann, R. (eds) (1988) Semiotics of Culture. Vammala: Arrator Inc.
21. Brown, H. I. (1990) Rationality. London: Routledge.
22. Carruther, P., Boutcher, J. (eds) (1998) Language and Thought. Cambridge, UK: Cambridge University Press.
23. Chisholm, R. M. (1989) Theory of Knowledge. Englewood Cliffs, NJ: Prentice Hall Inc.
24. Corbi, J. E., Prades, J. L. (2000) Minds, Causes, and Mechanisms: A Case against Physicalism. Oxford, UK: Blackwell Publishers Ltd.
25. von Cranach, M., Harré, R. (eds) (1982) The Analysis of Action. Cambridge MA: Cambridge University Press.
26. Damasio, A. (2000) Tapahtumisen tunne: Miten tietoisuus syntyy. Helsinki: Terra Gognita.
27. Damasio, A. (2001) Descartesin virhe. Helsinki: Terra Gognita.
28. Daniels, H. (1996) (ed) An Introduction to Vygotky. London: Routledge.
29. Danziger, K. (1997) Naming the Mind: How Psychology found its Language. London: Sage Publications.
30. Davenport, T. H., Prusak, L. (1998) Working Knowledge. Boston: Harvard Business School Press.
31. Darwin, C. G. (1954) Tuleva maailma. Helsinki: Kustannusosakeyhtiö Tammi.
32. Darwin, C. (1859 / 1986) The Origin of Species. Harmondsworth: Penguin Books Ltd.

33. Deal, T. A., Kennedy, A.A. (1982) Corporate Culture: The Rites and Rituals of Corporate Life. London: Addison-Wesley Publishing Company.
34. Dennett, D. C. (1991, 1993) Consciousness Explained. London: Penguin Books.
35. Dennett, D. C., Kinsbourne, M. (1992) Time and the Observer: The Where and When Consciousness in the Brain. Behavioural and Brain Sciences 15: 183 - 247.
36. De Groot, A. M. B., Kroll, J. F. (eds) (1997) Tutorials in Bilingualism: Psychological Perspectives. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
37. Descartes, R.(2002) Teokset II: Mietiskelyjä ensimmäisestä filosofiasta, Kirjeitä 1640 1641. Helsinki: Gaudeamus.
38. Duff, S. F. (2000) What's Working in Working Memory: A Role for the Central Executive. Scandinavian Journal of Psychology, 2000, 41, 9-16
39. Durham, W. H. (1991) Coevolution: Genes, Culture, and Human Diversity. Stanford: Stanford University Press.
40. Engeström, Y. (1987) Learning by Expanding: An Activity-Theoretical Approach to Developmental Research. Helsinki: Orienta-Konsultit Oy.
41. Enquist, K., Maalampi, J. (1994) Tyhjästä Syntynyt: Nykytieteen käsitys maaimankaikkeuden rakenteesta. Porvoo: WSOY.
42. Enquist, K. (1996) Näkymätön todellisuus. Porvoo: WSOY.
43. Enquist, K. (1998) Olemisen porteilla. Porvoo: WSOY.
44. Eskola, A. (1975) Sosiaalipsykologia. Helsinki: Kustannusosakeyhtiö Tammi.
45. Eskola, A. (1982) Vuorovaikutus, muutos, merkitys: Sosiaalipsykologian perusteiden kriittinen tarkastelu. Helsinki: Kustannusosakeyhtiö Tammi.
46. Eskola, A. (1985) Persoonallisuustyypeistä elämäntapaan. Helsinki: WSOY.
47. Ferré, F. (1998) Knowing and Value: Toward a Constructive Postmodern Epistemology. Albany, NY: The University of New York Press.
48. Forrester, M. A. (1996) Psycholgy of Language: A Critical Introduction. London: Sage Publications.
49. Foster, J. (1991) The Immaterial Self: A Defence of the Cartesian Dualist Conception of the Mind. London: Routledge.
50. Franklin, R. L. (1995) The Search for Understanding. New York: Peter Lang Publishing, Inc.
51. Freud, S. (1904 > 1972) The Psychopatholgy of Everyday Life. London: Benn.
52. Freud, S. (1954) Arkielämämme psykopaotologiaa. Helsinki: WSOY.
53. Freud, S. (1923 > 1962) Ego and the Id. New York: Norton.
54. Fromm, E. (1987) To Have or to Be. London: ABACUS.
55. Gay, P. (1988 >1996) Freud. Keuruu: Kustannusosakeyhtiö OTAVA.
56. Goldman, A. I. (1970) The Theory of Human Action. Englewood Cliffs: Prentice Hall.
57. Goldman, A. I. (2002) Pathways to Knowledge. Oxford: Oxford University Press.
58. Goldman, B. M. (2001) Unity of Knowledge: The Convergence of Natural and Human science. New York: Annals of the New York Academy of Sciences, Volume 935.
59. Goldstein, E. B. (1984) Sensation and Perception. Belmont, California: Wadsworth Publishing Company.
60. Goleman, D. (1996) Emotional Intelligence: Why it can matter more than IQ. London: Bloomsbury Publishing Plc.
61. Gomes, G. (1998) The Timing of Conscious Experience: A Critical Review and Reinterpretation of Libet's Research. Consciousness and Cognition **7**, 4. Orlando, Fl. USA: Academic Press.
62. Goodale, A. D., Dijkerman, H. C. (1998) Visual Processing in The Primate Parietal Lobe. In Goodale, A. D. (ed.) (1998) Comparative Neuropsychology. Oxford: Oxford University Press.
63. Griffin, D. (2002) The Emergence of Leadership: Linking self-orgnisation and ethics. London: Routlege.

64. Hacker, W. (1982) Yleinen työpsykologia. Espoo: Amer-yhtymä, Weilin + Göösin kirjapaino.

65. Haffenden, A. M., Goodale, M. A. (1998). The Effect of Pictorial Illusion on Prehension and Perception. Journal of Cognitive Neuroscience 10:1, 122 – 136.

66. Habermas, J. (1981 > 1984) The Theory of Communicative Action. Volum one: Reason and the Rationalization of Society. Boston: Beacon Press.

67. Hakala, J. T. (2002) Luova prosessi tieteessä. Helsinki: Gaudeamus.

68. Hall, S. and du Gay, P. (eds) (1996) Questions of Cultural Identity. London: Sage Publications.

69. Hanfling, O. (1989) Wittgenstein's later philosophy. Albany, NY: State University of New York Press.

70. Hanson, N. R. (1959) Patterns of Discovery. Cambridge: Cambridge University Press.

71. Hari, R., Loveless, N. (1997) Hearing Backwords in Time. In: Pylkkänen, P., Pylkkö, P., Hautamäki, A. (Eds) Brain, Mind, and Physics. Amsterdam: IOS-Press.

72. Hari, R., Levänen, S., and Raij, T. Timing of Human Cortical Functions During Cognition: Role of MEG. Trends in Cognitive Sciences, 4, 12, pp. 455-462, 2000.

73. Hari, R., Simões, C., Jensen, O., Parkkonen, L. Phase Locking Between Human Primary and Secondary Somatosensory Cortices, Proceedings of the National Academy of Sciences of the United States of America (PNAS) , 100, 5, pp. 2691-2694, 2003.

74. Harré, R. (1998) The Singular Self: An Introduction to the Psychology of Personhood. London: SAGE Publications.

75. Harré, R., Clarke, D., De Carlo, N. (1985) Motives and Mechanisms: An Introduction to the Psychology of Action. London: Methuen & Co.

76. Harré, R., Parrot, W. G. (eds) (1996) The Emotions: Social, Cultural, and Biological Dimensions. London: Sage Publications.

77. Harré, R., Stearns, P. (eds) (1996) Discursive Psychology in Practice. London: Sage Publications.

78. Harrison, R. (ed) (1979) Rational Action: Studies in Philophy and Social Science. London: Cambridge University Press.

79. Harva, U. (1978) Hyvä ja paha: praktisen etiikan ongelmia. Keuruu: Kustannusosakeyhtiö Otava.

80. Haselager, W.F.G. (1997) Cognitive Science and Folk Psychology. London: Sage Publications.

81. Hawking, S. W. (1988) Ajan lyhyt historia. Helsinki: WSOY.

82. Hayakawa, S. I. (1966) Ajattelun ja toiminnan kieli. Helsinki: Otava.

83. Herbert, N. (1994) Elemental Mind: Human Consciousness and the New Physics. New York: Penguin Books USA.

84. Honeth, A., Joas, H. (1988) Social Action and Human Nature. Cambridge: Cambridge University Press.

85. Immonen, S. (1993) Vuorovaikutus johtamisen välineenä. Espoo: Teollisuustalous ja Työpsykologia, HUT, Report No150.

86. Jackendoff, R. (1990) Semantic Structures. Cambridge MA: MIT Press.

87. Jackendoff, R. (1996) Language of the Mind: Essays on Mental Representation. London: The MIT Press.

88. Jackendoff, R. (2002) Foundations of Language: Brain, Meaning, Grammar, Evolution. Oxford University Press.

89. Jahuda, G. (1992) Crossroads Between Culture and Mind: Continuities and Change in Theories of Human Nature. London: Harvester Weathshief.

90. James, W. (1890) The Principles of Psychology (2 vols.). New York: Henry Holt (Reprinted Bristol: Thoemmes Press, 1999).

91. Kaila, E. (1939) Inhimillinen tieto: Mitä se on ja mitä se ei ole. Helsinki: Kustannusosakeyhtiö Otava.

92. Kaila, E. (1952) Persoonallisuus. Helsinki: Kustannusosakeyhtiö Otava.

93. Kaila, E. (1954) Syvähenkinen elämä. Helsinki: Kustannusosakeyhtiö Otava.

94. Kaila, E. (1990) Valitut teokset 1. Helsinki: Kustannusosakeyhtiö Otava.

95. Kaila, E. (1991) Valitut teokset 2. Helsinki: Kustannusosakeyhtiö Otava.

96. Kailas, U. F. (1963) Runoja. Helsinki: WSOY.

97. Kamppinen, M., Laihonen, P., Vuorisalo, T. (eds) (1989) Kulttuurieläin: Ihmistutkimuksen Biologiaa. Keuruu: Otava.

98. Kanniainen, V., Sintonen, M. (eds) (2003) Etiikka & Talous. Helsinki: WSOY.

99. Kant, I. (1787 / 1986) Critic of Pure Reason. London: Everyman's Library.

100. Keil, C. F. (1987) Concepts, Kinds, and Cognitive Development. London: The MIT Press.

101. Kirschenbaum, H., Henderson, V. L. (eds) The Carl Rogers Reader. London: Constable.

102. Kivinen, S. (1977) C. D. Broad's Views on Abstracta. Helsinki: Helsingin Yliopiston Filosofian laitoksen julkaisuja.

103. Kolb, B., Whishaw, I. O. (1996) Fundamentals of Human Neuropsychology. New York: W. H. Freeman and Company.

104. Korhonen, M. (1993) Kielen synty. Helsinki: WSOY

105. Kotarbinski, T. (1965) Praxiology: An Introduction to the Science of Efficient Action. Oxford: Pergamon Press.

106. Krohn, S. (1953) Arvojen yleispätevyyden ongelma: Arvofilosofinen tutkielma. Helsinki: Helsingin Yliopisto.

107. Krohn, S. (1967) Totuus, arvo ja ihminen: Filosofisia esseitä. Helsinki: WSOY.

108. von Krogh, G., Roos, J., Kleine, D. (eds) (1998). Knowing in Firms. London: Sage Publications.

109. Kusch, M. (1995) Psychologism. London: Routledge.

110. K⎩ng, H., Kuxhel, K. J. (eds) 1993 Elämää säilyttävät arvot: Maailman uskontojen parlamentin julistus ja sen tausta. Helsinki: Arator.

111. Laine, T. (1994) Ihmisen mallit: Symbosiumi filosofisesta antropologiasta. Jyväskylä: Jyväskylän yliopisto, Filosofian laitos.

112. Laine,T., Kuhmonen, P. (1995) Filosofinen antropologia: Ihmisen kokoaisuutta etsimässä. Jyväskylä: Atena kustannus Oy.

113. Lakof, G., Johnson, M. (1999) Philosophy in Flesh: The Embodied Mind and its Challenge to Western Thought. New York, NY: Basic Books.

114. Lamberts, K., Shanks, D. (eds) (1997) Knowledge, Concepts and Categories. Hove: Psychology Pre-suppositions.

115. Lammenranta, M. (1993) Tietoteoria. Tampere: Gaudeamus.

116. Lammenranta, M. (1995) Two Problems of Naturalistic Epistemology: Introduction. Helsinki: Yliopistopaino.

117. Langacker, R. W. (1990) Concept, Image, and Symbol: The Cognitive Basis of Grammer. New York: Mouton de Gruyter.

118. Langacker, R. W. (199?)

119. Lazarus, R. S. (1977) Persoonallisuus. Espoo: Amer-yhtymä, Weilin + Göösin kirjapaino.

120. Leontjev, A. N. (1977) Toiminta, tietoisuus, persoonallisuus. Helsinki: Kansankulttuuri.

121. Leppänen, A. (1993) Työn käsitteellisen hallinnan ja hyvinvoinnin yhteydet ja kehittyminen paperinvalmisuksessa työskentelevillä. Helsinki: työ ja ihminen 6/93, Työympäristötutkimuksen Aikakauskirja, lisänumero 6/93.

122. Lewin, K. (1938) The Conceptual Representation and the Measurement of Psychological Forces. Durham, N.C: Duke University Press.

123. Levonmäki, I. (1998) Arvojen moninaisuus tietoyhteiskunnassa. Helsinki: Sitra.

124. Lillrank, P. & al. (1996) The Impact of Information and Communication Technologies (ICT) on Business Performances: A Constructive Empirical Study and Philosophical Enquiry. Espoo: Helsinki University of Technology, Department of Industrial Management.

125. Lillrank, P. (1997) The Quality of Information in Business Processes. Espoo: Helsinki University of Technology, Department of Industrial Management.

126. Lillrank, P. (1998) Introduction to Knowledge Management in Managing for Knowledge: Perspectives and Prospects. Lillrank, P. and Forssén (eds) (1998) Espoo: Helsinki University of Technology, Department of Industrial Management.

127. Lindfors, P. (1978) Der Dialektische Materialismus und Der Logische Empirismus: Eine Kritische und Vergleichende Untersuchung. Jyväskylä: Jyväskylän Yliopisto.

128. Lonka, K. (1997) Explorations of Constructive Processes in Student Learning. Helsinki: Yliopistopaino.

129. Luger, G. F. (1994) Cognitive Science: the science of intelligent systems. London: Academic Press, Inc.

130. Luria, A. R. (1973) The Working Brain. Harmondsworth: Penguin.

131. Luria, A. R. (1979) The Making of Mind: A Personal Account of Soviet Psychology

132. Lycan, W. G. (1990) (ed.) Mind and Cognition: A Reader. Cambridge, MA: Basil Blackwell.

133. Lyon, G. R., Krasnegor, N. A. (eds) (1996) Attention, Memory, and Executive Function. London: Brookes Publishing Co.

134. Marjomaa, E. (1997) Aspects of Relevance in Information Modelling: Methodological Principles and Conceptual Problems. Tampere: Filosofisia tutkimuksia Tampereen Yliopistosta. Vol. 63

135. Martikainen, V. (1958) Diplomityö in Helsinki University of Technology: Tutkimus erään puuvillakutomon monikonekäytöstä ja ehdotus sen uudelleen järjestämiseksi. (Aplication of queuing-theory in multi-machine operations in an automatic weaving factory)

136. Martikainen, V. (1962- 2002) Luentomonisteita johtamisen seminaareissa eri vuosilta. Unpublished papers for management training from years 1962 - 2002.

137. Martikainen, V. (1967) Tutkimus työnsuunnittelun yleisten suuntaviivojen selvittämiseksi valtion rakentavissa työvirastoissa (TVH, VR, MtH) in Komiteamietintö 1967: B 27. Helsinki: Valtion painatuskeskus.

138. Martikainen, V., Laitakari, L.K., Vestama, A. (1978) Rationalisointisanasto, 2.painos. Karkkila: Karprint.

139. Martikainen, V. (1986) Mitä on ihmislähtöinen kannusteohjaus. In Paikallisliikenne 2.10.1986. Forssa: Kirjapaino Auranen.

140. Martikainen, V. (1996) Concepts and Experiencing as Elements of the Steering system of a Rational Actor: Features of a new Conception of Man in Management. Unpublished paper in doctoral seminar 2. 12. 1996, Laboratory of Industrial Psychology and Leadership, Helsiki University of Technology.

141. Martikainen, V. (1995) Piirteitä uudesta ihmiskäsityisestä. An unpublished paper in the meeting of the Finnish Society for Futures Studies, Helsinki, April 1995.

142. Martikainen, V. (1998) System Structure of Concepts and Conceptions and their Connections to Human Language and Thinking. Unpublished paper for the NorFA-conference: Languages, Minds, and Brains, Mekrijärvi Research Station, of Joensuu University, June 22-29, 1998.

143. Martikainen, V. (1999) Käsitteet ja tiedon ulottuvuudet. An unpublished paper in the meeting of Luonnonfilosofian Seura, April 2000.

144. Martinsuo, M. (1999) Promoting Values in a Multinational Enterprise. Espoo: HUT Industrial Management and Work and Organisational Psychology.

145. Materna, P. (1998) Concepts and Objects. Helsinki: Acta Philosophica Fennica, Vol 63.

146. McGinn, C. (1991) The Problem of Consciousness: Essays Toword a Resolution. Oxford: Basil Blackwell Ltd.

147. McKenna, E., Beech, N. (2002) Human Resource Management. London: Prentice Hall.

148. McLaughlin, B. (ed) (1991) Dretske and His Critics. Oxford, UK: Basil Blackwell Ldt.

149. Merleau-Ponty, M. (1962 / 1998) Phenomenology of Perception. London: Routledge.

150. Merleau-Ponty, M. (1964 / 1993) Silmä ja mieli. Helsinki: Kustannusosakeyhtiö Taide.

151. Miller, G. A. (1956) The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information. Psychological Review 63, 81 – 97.

152. Miller, G.A., Galanter, E., Pribram, K. M. (1960) Plans and the Structure of Behaviour. New York: Rinehart & Winston.

153. Milner, A. D. (ed.) (1998) Comparative Neuropsychology. Oxford: Oxford University Press.

154. Minsky, M. L. (1988) The Society of Mind. New York: Simon & Schuster, Inc.

155. Mitchell, P. (1996) Acquiring a Conception of Mind. Hove, UK: Psychology Press.

156. Miyake, A., Shah, P. (eds.) (1999) Models of Working Memory: Mechanisms of Active Maintenance and Executive Control. Cambridge, UK: Cambridge University Press.

157. Määttänen, P. (1993) Action and Experience: A Naturalistic Approach to Cognition. Helsinki: Suomalainen Tiedeakatemia.

158. Moore, G. E. (1965) Etiikan peruskysymyksistä. Helsinki: Otava.

159. Moser, P. K., Mulder, D. H., Trout, J. D. (eds) (1998) The Theory of Knowledge: A Thematic Introduction. New York: Oxford University Press.

160. Murphy, G. L. (2002) The Big Book of Concepts. London: The MIT Press.

161. Nagel, E. (1961) The Structure of Science. London: Routledge & Kegan Paul.

162. Neisser, U. (1976) Cognition and Reality: Principles and Implications of Cognitive Psychology. San Francisco: W. H. Freeman and Company.

163. Neisser, U. (1982) Kognitio ja todellisuus. Espoo: Amer Yhtymä Oy Weilin+Göösin kirjapaino.

164. Nietzsche, F. (1882 / 1972) Iloinen tiede. Helsinki: Otava.

165. Niiniluoto, I. (1980) Johdatus tieteen filosofiaan: Käsitteen- ja teorianmuodostus. Helsinki: Otava.

166. Niiniluoto, I. (1981) Language, Norms, and Truth in Acta Philosphica Fennica, vol.32, 1981. Helsinki: Societas Philosophica Fennica.

167. Niiniluoto, I. (1983) Tieteellinen päättely ja selittäminen. Helsinki: Otava

168. Niiniluoto, I. (1987) Truthlikeness. Dordreht: D. Reidel.

169. Niiniluoto, I. (1989) Informaatio, tieto ja yhteiskunta; Filosofinen käsiteanalyysi. Helsinki: Valtion painatuskeskus.

170. Niiniluoto, I. (1990) Maailma, minä ja kulttuuri. Helsinki: Otava.

171. Niiniluoto, I. (1994) Järki, arvot ja välineet. Helsinki: Otava.

172. Niiniluoto, I. (1999 a) Critical Scientific Realism. Oxford: Oxford University Press.

173. Niiniluoto, I. (1999 b) Defending Abduction. Philosophy of Science, 66 (proceedings) pp. S436 - S451.

174. Niiniluoto, I., Koskinen, H. J. (toim.) Kognitiivisesta naturalismista naturalistiseen kognitioon. Helsinki: Helsingin yliopiston ja psykologian laitosten järjestämä kotimainen kollokvio 8.11.1995.

175. Niiniluoto, I., Tuomela, R (1973) Theoretical Consepts and Hypothetico-Inductive Inference. Boston: D. Reidel Publishing Company.

176. Nikanne, U. in Harvilahti, L., Kalliokoski, J., Nikanne, U., Onikki. T, (eds) (1992) Metafora: Ikkuna kieleen, mieleen ja kulttuuriin. Tampere: Suomalaisen Kirjallisuuden Seura.

177. Nikanne, U. (1990) Zones and Tiers: A Study of Thematic Structure. Tampere: Suomalaisen Kirjallisuuden Seura.

178. Nonaka, I., Takeuchi, H. (1995) The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation. Oxford: Oxford University Press.

179. Nonaka, I., von Korgh, G., Ichijo, K. (2000) Enabling Knowledge Creating. Oxford: Oxford University Press.

180. Nyman, G. (1983) Spatial and Temporal Selectivity of Size-tuned Mechanisms in Human Vision. Helsinki: Helsingin yliopisto, General Psychology Monographs No. B 4.

181. Nyman, G. (1999) Ohjelmistoprojektien johtaminen. Luentomateriaalia. Tietojenkäsittelylaitos, Helsingin Yliopisto.

182. Nyman, G., Häkkinen, J. (1997) Dimension Reduction and Local Intelligence in Three-Dimensional Perception. In: Pylkkänen, P., Pylkkö, P., Hautamäki, A. (eds) Brain, Mind, and Physics. Amsterdam: IOS-Press.

183. Näätänen, R. (1992) Attention and Brain Function. London: Lawrence Erlbaum Associates, Publishers.

184. O'Donohue, W., Kitchener, R. F. (eds) (1996) The Philosophy of Psychology. London: Sage Publications.

185. Otala, L. (1993) Lifelong Learning Based on Industry-University Cooperation: A Strategy for European Industry's Competitiveness. Espoo: Helsinki University of Technology.

186. Paradis, M. (1997) The Cognitive Neuropsychology of Bilingualism in de Groot, A. B. M., Krol, J. F. (eds) (1997) Tutorials in Bilingualism. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

187. Parsons, T. (1949 > 1964) The Structure of Social Action: A Study in Social Theory with Special Reference to a Group of Recent European Writers. New York: The Free Press of Glencoe.

188. Paivio, A. (1981) Psychology of Language. Englewood Cliffs, N.J.: Prentice Hall.

189. Paivio, A. (1986) Mental Representations; A Dual Coding Approach. Oxford: Clarendon Press.

190. Paivio, A. (1991) Images in mind: the evolution of a theory. London: Harvester Wheatsheaf.

191. Peacok, C. (1999) A Study of Concepts. London: The MIT Press.

192. Piaget, J. (1936 > 1983) the Origin of Intelligence in the Child. Singapore: Penguin Books.

193. Piaget, J. (1964-1972 > 1988) Lapsi maailmansa rakentajana: Kuusi esseetä lapsen kehityksestä. Helsinki: WSOY.

194. Pietarinen, J. (1993) Ilon filosofia: Spinozan käsitys aktiivisesta ihmisestä. Helsinki: Yliopistopaino.

195. Pickering, J., Skinner, M. (eds) (1990) From Sentience to Symbols. London: Harvester Wheatsheaf.

196. Pihlström, S. (1996) Structuring the World. Acta Philosophica Fennica, Vol 59. Helsinki: Department of Philosophy, University of Helsinki.

197. Pinker, S. (1994) The Language Instinct. New York: Harper Collins.

198. Pinker, S., & Prince, A. (1996) The Nature of Human Concepts: Evidence from an unusual source. Communication and Cognition 29, 307-361.

199. Pinker, S. (1997) How the Mind Works. London: W. W. Norton & Company.

200. Pirttilä-Backman, A-M. (1993) The Socialpsychology of Knowledge Resasessed. Helsinki: Suomalainen tiedeakatemia.

201. Pohjanheimo, E. (1997) Arvojen muutostyö ja sosiaalinen tausta: Tutkimus työikäisistä Pyhtääläisistä 1982-1993. Helsinki: Helsingin yliopiston Sosiaalipsykologian laitoksen tutkimuksia.

202. Quinton, A. in Bullock & all. (eds) (1990) The Fontana Dictionary of Modern Thought. London: Fontana Press.

203. Rainio, K. (1955) Käytännön psykologiaa. Helsinki: WSOY.

204. Rainio, K. (1969) Valta ja vallan käyttö. Helsinki: WSOY.

205. Rauhala, L. (1983) Ihmiskäsitys ihmistyössä. Jyväskylä: Gaudeamus.

206. Rauhala, L. (1990 Humanistinen psykologia. Helsinki: Yliopistopaino.

207. Rauhala, L. (1993) Henkinen ihmisessä. Helsinki: Yliopistopaino.

208. Rauhala, L. (1993) Eksistentaalinen fenomenologia hermeneuttisen tieteenfilosofian menetelmänä. Tampere: Tampereen yliopisto.

209. Rauste-von Wright, M., Niemi, P., Nurmi, J-E. (1984) Arvojen empiirisen tutkimuksen problematiikkaa. Turku: Turun yliopisto.

210. Rescher, N. (2001) Cognitive Pragmatism: The Theory of Knowledge in Pragmatic Perspective. Pittsburg: University of Pittsburg Press.

211. Revonsuo, A., Kamppinen, M. (eds) (1994) Consciousness in Philosophy and Cognitive Neuroscience. Hove, UK: Lawrence Erlbaum Associates, Publishers.

212. Revonsuo, A. (1995) On the Nature of Consciousness. Theoretical and Empirical Explorations. Turku: Turun Yliopisto.

213. Revonsuo, A., Lang, H., Aaltonen, O. (1996?) Mieli ja aivot: Kognitiivinen neurotiede. Turku: Painosalama.

214. Rizzolatti, G. and Arbib, M. (1998) Language within our grasp. Trends in Neuroscience. 21: 188-194.

215. Rollinson, D., Broadfield, A. (2002) Organisational Behaviour and Analysis: An Integrated Approach. London: Prentice Hall.

216. Ropo, A. (1989) Leadership and Organizational Change. Tampere: University of Tampere.

217. Saariluoma, P. (1989) Taitavan ajattelun psykologia. Keuruu: Otava

218. Saariluoma, P. (1995) Chess Players Thinking: A cognitive psychological approach. London: Routledge.

219. Saariluoma, P. (1996) Apperseption ulottuvuuksia: psykofyysinen ongelma. In: Niiniluoto, I., Koskinen, H. J. (toim.) Kognitiivisesta naturalismista naturalistiseen kognitioon. Helsinki: Helsingin yliopiston ja psykologian laitosten järjestämä kotimainen kollokvio 8.11.1995.

220. Saariluoma, P. (1997) Foundational Analysis: Presuppositions in experimental psychology. London: Routledge.

221. Saariluoma, P., Maartola, I., Niemi, P. (1998) Ajatteluriskit ja kognitiiviset prosessit taloudellisessa toiminnassa: Teknologiakatsaus 65/98. Helsinki: Tekes.

222. Sackman, S. A, (1991) Cultural Knowledge in Organizations: Exploring the Collective Mind. London: Sage Publications.

223. Salmela, M. (1998) Suomalaisen kulttuurifilosofian vuosisata. Helsinki: Otava.

224. Sapsford, R., Still, A., Wetherell, M,, Miel, D., Stevens, T. (eds) (1998) Theory and Social Psychology. London: Sage Publications.

225. Sarmela, M. (1984) Kirjoituksia Kulttuuriantropologiasta. Mikkeli: Suomen Antropologinen Seura, Suomalaisen Kirjallisuuden Seura.

226. de Saussure, F. (1990) Course in General Linguistics. London: Duckworth.

227. Service, E. (1989) Phonological Coding in Working Memory and Foreign-Language Learning. Helsinki: Yliopistopaino

228. Searle, J. R. (1994) Intentionality: an Essay in the Philosophy of Mind. Cambridge: Cambridge University Press.

229. Searle, J. R. (ed) (1971/1989) The Philosophy of Language. London: Oxford University Press.

230. Searle, J. R. (1992) The Rediscovery of the Mind. Cambridge, MA: MIT Press.

231. Searle, J. R. (2002) Consciousness and Language. Cambridge, MA: University Press.

232. Searleman, A., Herrmann, D. (1994) Memory from a Broader Perspective. New York: McGraw-Hill, Inc.

233. Senge, P. M. (1990) The Fifth Discipline: The Art and Practice of the Learning Organisation. London: Currency Doubleday.

234. Senge, P. M., Kleiner, A., Roberts, C., Ross, R., Roth, G., Smith, B. (1999) The Dance of Change: The Challenge of Sustaining Momentum in Learning Organisations. London: Currency Doubleday.

235. Seppänen, J. (1998) Systems Ideology in Human and Social Sciences - History and Philosophy of System and Model Thinking, Infromation Theory and Cybernetics. In Systems new Paradigms for the Human Sciences. Ed. By Gabriel Altmann and Walter A. Koch, Walter de Gruiter, Berlin

236. Seppänen, J. (1998) History and Philosophy of Emergence, Self-organizable and Complex Dynamics. Espoo: Department of Computer Science, Helsinki University of Technology.

237. Siegfried, Jurg. (ed) (1994) The Status of Common Sense in Psychology. Norwood, NJ, USA: Ablex Publishing Corporation.

238. Sihvola, J. (1994) Hyvän elämän politiikka. Helsinki: Tutkijaliitto.

239. Sintonen, M. (ed) Biologian filosofian näkökulmia. Tampere: Oy Yliopistokustannus University Press Finland Ltd / Gaudeamus Kirja.

240. Skolimowski, H. (1984) Mielen näyttämö. Helsinki: Kirjayhtymä.

241. Skoyles, J. R. (2002) Mirrror Neurons and the Motor Theory of Speech. http://www.users.globalnet.-co.uk/~skoyles/index.htm

242. Smith, L. and Samuelsson, L. in Lamberts, K., Shanks, D. (eds) (1997) Knowledge, Concepts and Categories. Hove: Psychology Press.

243. Smith, A. J., Harré, R. and Van Langehove, L. (eds) (1995) Rethinking Psychology. London: Sage.

244. Solso, R. L. (1997) (ed.) Mind and Brain Sciences in the 21st Century. Cambridge, MA: The MIT Press.

245. Sperber, D. and Wilson, D. (1998) The Mapping Between The Mental and Public Lexicon. In Carruther, P., Boutcher, J. (eds) Language and thought. Cambridge, UK: Cambridge University Press.

246. Stam, H. J. (1998) (ed) The Body and Psychology. London: Sage Publications.

247. Steels, L. (2002) Mirror Neurons and the Action Theory of Language Origins. Vrije Universiteit Brussel (AI lab). steels@arti.vub.ac.be

248. Tarasti, E. (1990) Johdatusta semiotiikkaan: Esseitä taiteen ja kulttuurin merkkijärjestelmistä. Helsinki: Gaudeamus.

249. Taylor, R. (1980) Action and Purpose. Atlantic Highlands, N. J.: Humanities Press.

250. Taylor, J. G, Mannion, C.L.T. (eds) (1992) Coupled Oscilating Neurons. Berlin, Heidelberg, New York: Springer Verlag.

251. Teikari, V. (1977) Vigilanssi-ilmiön mittaamisesta ja selitysmahdollisuuksista. Jyväskylä: Jyväskylän yliopisto.

252. Teikari, V., Järvenpää, M. (1981) Miten johtamista voi tehostaa psykologisin keinoin? Otaniemi: Teknillinen korkeakoulu, Teollisuustalouden ja työpsykologian laboratoriot. Raportti No 59.

253. Teikari, V., Niemelä, E. (1984) Työn psyykkinen kuormittavuus: käsitteet, malli ja mittaaminen. Otaniemi: Teknillinen korkeakoulu, Teollisuustalouden ja työpsykologian laboratorio. Report No 82/1984.

254. Teikari, V., Koivula, A. (1996) Pyramidi murenee: näkökulmia tietotyön johtamiseen. Espoo: Teknillinen korkeakoulu, Tuotantotalous.

255. Tissari, T. (2002) Coevolutionary Approach for Implementing Organiszational Change: Case Study on a Business Process Change in a Large Organisazation. Espoo: Helsinki University of Technology, Executive School of Industrial Management, Exima.

256. Tomlin, E. (1985) Psyche, Culture and the New Science. London: Routledge & Kegan Paul.

257. Tryphon, A., Vonéche, J. (eds) (1996) Piaget-Vygotsky - The Social Genesis of Thought. Trowbridge Wiltshire: Psychology Press.

258. Tuomela, R. (1973) Theoretical Concepts. Wien: Springer-Verlag.

259. Tuomela, R. (1977) Human Action and its Explanation: A Study on the Philosophical Foundations of Psychology. Boston: D. Reidel Publishing Company.

260. Tuomela, R. (1983) Tiede, toiminta ja todellisuus: Tieteellisen maailmankäsityksen perusteet. Helsinki: Gaudeamus.

261. Tuomela, R. (2003) The Philosophy of Social Practices: A Collective Acceptance View. London: Cambridge University Press.

262. Tuomi, I. (1999) Corporate Knowledge: Theory and Practice of Intelligent Organisations. Helsinki: Metaxis.

263. Turunen, K. E. (1993) Arvojen todellisuus: Johdatus arvokasvatukseen. Jyväskylä: Atena Kustannus Oy.

264. Ungerer, F., Schmid, H. J. (1996) An Introduction to Cognitive Linguistics. London: Longman.

265. Uusitalo, M. A. (1997) Magnetic Source Imaging of Visual Motion Processing and Neural Activation Traces in the Human Brain. Espoo, Finland: Helsinki University of Technology.

266. Van Oostendorp, H., Goldman, S. R. (eds) (1999) The Construction of Mental Representations During Reading. London: Lawrence Erlbaum Associates, Publishers.

267. Van Der Veer, R., Valsinner, J. (eds) (1994) Understanding Vygotsky. Oxford: Blackwell.

268. Vartiainen, M. (1987) The Hierarchical Development of Mental Regulation, and Training Methods. Otaniemi: Helsinki University of Technology.

269. Venkula, J. (1993) Tiedon suhde toimintaan: Titeellisen toiminnan ulottuvuuksia, Osa I. Helsinki: Yliopistopaino.

270. Venkula, J. (1993 b) Tiede, Etiikka, Viisaus: Titeellisen toiminnan ulottuvuuksia, Osa II. Helsinki: Yliopistopaino.

271. Vuorinen, R. (1997) Minän synty ja kehitys. Porvoo: WSOY.

272. Vygotski, L. S. (1931 > 1982) Ajattelu ja kieli. Espoo: Amer-yhtymä, Weilin + Göös.

273. Vygotski, L. S. (1934 > 1962) Thought and Language. Cambridge, MA:.

274. Vygotski, L. S. (1978). Mind in Society. Cambridge, MA: The MIT Press.

275. Wallin, J. (2000) Customer Orientation and Competence Building. Espoo: Acta Polytechnica Scandinavica, Industrial Management and Business Administration Series No. 6.

276. Warner, R., Szubka, T. (eds) (1994) The Mind-Body Problem: A Guide to the Current Debate. Oxford: Blackwell.

277. Weinshall, T. D. (Ed) (1977) Culture and Management: Selected Readings. London: Penguin Books.

278. Weitz, M. E. (1988) Theories of Concepts: A History of the Major Philosophical Tradition. London: Routledge.

279. Wellborn, M. (2001) Knowledge. King's Lynn, UK: Acumen Publisihing Limited.

280. Wertsch, J. V. (1985) Vygotsky and the Social Formation of Mind. London: Harvard University Press.

281. Wickelgren, W. A. (1977) Learning and Memory. Englewood Cliffs: Prentice-Hall Inc.

282. Wiio, O. A. (1981) Information and Communication: A Conceptual Analysis. Helsinki: Helsingin yliopisto, Tiedotusopin laitos.

283. Wilson, E. O. (1998) Consilience: The Unity of Knowledge. New York: Alfred A. Knopf.

284. Wittgenstein, L. (1971) Tractatus. Porvoo: WSOY

285. Wittgenstein, L. (1975) Varmuudesta. Porvoo: WSOY.

286. Wittgenstein, L. (1980) Sininen ja ruskea kirja. Juva: WSOY.

287. Wittgenstein, L. (1981) Filosofisia tutkimuksia. Juva: WSOY.

288. Wittgenstein, L. (1983) Filosofisia huomautuksia. Juva: WSOY.

289. von Wright, G. H. (1945) Looginen Empirismi. Helsinki: Otava.

290. von Wright, G. H. (1963) Norm and Action: A Logical Enquiry. London: Routledge & Kegan Paul.

291. von Wright, G. H. (1963) The Varieties of Goodness. London: Routledge & Kegan Paul.

292. von Wright, G. H. (1968) Logiikka, filosofia ja kieli. Helsinki: Otava.

293. von Wright, G. H. (1971) Explanation and Understanding. London: Routledge & Kegan Paul.

294. von Wright, G. H. (1985) Filosofisia Tutkimuksia. Juva: Kirjayhtymä.

295. von Wright, G. H. (2001) Hyvän muunnelmat. Helsinki: Kustannusosakeyhtiö Otava.

296. Wrobel, S. (1993) Concepts Formation and Knowledge Revision: Demand-Driven Approach to Representation Change. Dortmund: der Universität Dortmund.

297. Wuthnow, R., Davidson Hunter, J., Bergesen, A., Kurzweil, E. (eds) (1984) Cultural Analysis: The Work of Peter M. Berger, Mary Douglas, Michel Foucault and Jûrgen Habermas. London: Routledge & Kegan Paul.

Viljo Martikainen made his Master of Science 1958 in Helsinki University of Technology. Since that he has made managerial studies in INSEAD, IMD, AMA, acted 4 years in industry, and fourty years as management consultant. He found that the results of human organisations depended on the three factors, which were individuals' ability, possibility, and motivation to achieve the set goals. These objects of leadership had often had minor attention by the managers of organisations.

What are real factors of the human productivity in organisations has been the problem the author has researched using the long experiences of management development programs in public and private organisations. The knowledge of the human mental features seems to be lacking in most organisations. Human scientists and philosophers have varying and not satisfying explanations of the main problems areas of management. The basic substance of man and his action, knowledge, motivation, and organisational culture have now been seen from somewhat new point of view. This led to the RA-model of man and his connections to his environment as described in this book. The total system view of man and his environment is pictured in the figure below.

Figure 2.1 The System Description of a Rational Actor and his Environment